

Series: **NATIONAL TECHNICAL ASSESSMENTS**

CNBOP-PIB NATIONAL TECHNICAL ASSESSMENT CNBOP-PIB-KOT-2023/0371-3703 issue 2

This CNBOP-PIB National Technical Assessment replaces
CNBOP-PIB National Technical Assessment No CNBOP-PIB-KOT-2023/0371-3703 issue 1

Pursuant to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Dz. U. 2016, item 1968) as a result of the proceedings to issue a National Technical Assessment carried out in the Scientific and Research Centre for Fire Protection - National Research Institute (CNBOP-PIB) in Józefów near Otwock at the request of the company:

BAKS Wytwarzanie Osprzętu Instalacyjno – Elektrotechnicznego
Kazimierz Sielski
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we hereby issue a positive assessment of the performance for the intended use of the construction product under the name:

**BAKS cable systems
(cable support structures with electric conductors and cables) in
the circuit integrity maintenance class E30, E60, E90 according to
DIN 4102-12**

Manufacturer of support structures: BAKS

**Manufacturers of conductors and cables: BITNER, DÄTWYLER, ELKOND, EUPEN,
NEXANS, FACAB LYNEN, PRAKAB, LEONI
STUDER, TECHNOKABEL, TELE-FONIKA KABLE,
MADEX, KABLOTEK, ELPAR, NKT, ERSE, VLG**

with the purpose, scope, conditions and terms specified in the Annex, which is an integral part of this CNBOP-PIB National Technical Assessment.

Validity date

from 22 February 2023
to 02 January 2028

Deputy Director
for certification and approvals

Sr. brig. dr inż. Jacek Zboina

Annex

General and technical provisions

Józefów, 22 February 2023

CNBOP-PIB National Technical Assessment No CNBOP-PIB-KOT-2023/0371-3703 t, Issue 2 contains 110 pages. It is permissible to copy the CNBOP-PIB National Technical Assessment in its entirety or only the first page. Copying, publishing or disseminating in any other form of the fragments of the National Technical Assessment requires a written agreement with the Scientific and Research Centre for Fire Protection - National Research Institute.

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GENERAL AND TECHNICAL PROVISIONS

1. TECHNICAL DESCRIPTION OF THE PRODUCT

1.1. General technical characteristics of the product

The subject of this CNBOP-PIB National Technical Assessment are BAKS cable systems (cable support structures with electric conductors and cables) with the circuit integrity maintenance class E30, E60, E90 according to DIN 4102- 12:1998 – sets of products consisting of BAKS cable support structures and cables produced by the manufacturers indicated in Table 2.

BAKS cable systems ensure the **continuity of power supply or signal transmission under fire conditions** for the time required for the start-up and operation of fire protection equipment¹ and are classified as **electrical functions support class E30, E60 or E90**, according to DIN 4102-12:1998, depending on the type and type of cable supporting structure and the type and type of cable used.

The maintenance of the integrity of the cable system is understood as its ability to maintain continuous transmission of electrical energy and IT signals (e.g. in emergency power supply circuits) at the fire temperature determined by the standard curve (ETK) for 30, 60 or 90 minutes and under static rated load.

BAKS cable systems include:

- standard systems which are constructed according to section 7.3.3.3 of DIN 4102- 12:1998,
- Special (above-standard) systems which have parameters other than those specified in section 7.3.3.3 of DIN 4102-12:1998 with regard to the fixing method, material thickness, type of substrate, type of material and type of coating, e.g. mesh trays, structures with a larger spacing of suspension points, etc.

The assessment of BAKS cable systems in the scope of maintaining circuit integrity (continuity of electrical power supply or signal transmission), taking into account the type of substrate and expected fixing method, is performed in accordance with the conditions specified in the Polish Standard for Fire Resistance Testing PN-EN 1363-1:2012 and PN-EN 1363-1:2020-07 Fire resistance tests - Part 1 General requirements and DIN 4102-12:1998 Fire performance of construction materials and components - Part 12: Maintenance of the circuit integrity of cable systems - Requirements and tests. The test procedure for standard and special cable systems is compliant with the DIN 4102-12:1998 standard.

The scope of application of BAKS cable systems is limited to cables with a rated voltage of 1 kV.

BAKS cable systems may, **with reservation to section 2.2 of this CNBOP-PIB National Technical Assessment**, include BAKS cable support structure elements listed in Table 1 and designated cable types produced by the manufacturers listed in Table 2.

¹ In accordance with the Regulation of the Minister of Infrastructure on technical conditions to be met by buildings and their location of 12 April 2002 (consolidated text Dz. U. No. 2022, item 1225),

Annex 1 contains the drawings of standard BAKS cable support structures and classifications of cable systems according to DIN 4102-12:1998, depending on the used configuration of the standard cable supporting structure and cable.

Annex 2 contains the drawings of special BAKS cable support structures and classifications of cable systems according to DIN 4102-12:1998, depending on the used configuration of the special cable supporting structure and cable.

In Annex 3, since the DIN 4102-12:1998 standard does not provide for:

- E120 classification, Tables 1-19 present the result of the test in the form of the achieved duration of continuity of electricity supply under fire conditions, depending on the special cable support structure and cable configuration used,
- E classification for fibre optic cables, Tables 20-21 present the time taken to maintain adequate functionality, i.e. a maximum change in attenuation of $\leq 1\text{dB/m}$ for single-mode fibre optics and $\leq 2\text{dB/m}$ for multimode fibre optics (in accordance with PN-EN 50582:2016-12), depending on the special cable support structure and cable configuration used,

Annex 4 contains connection drawings for BAKS trays, cable racks, channel sections and mesh trays and their fixing method to support structures.

Table 1

| TRAY SYSTEM | | |
|------------------|--|---|
| No. | Product name | Symbol |
| 1 | Cable tray | KGL/KCL 50H60 KCL100H42 KCL100 - 300H60, KCL/KCOL100 - 300H60 KCJ100 - 400H60, KCJ/KCOJ100 - 400H60 KLFL75H60 KGL100H42 KGL100 - 300H60, KGL/KGOL100 - 300H60 KGJ100 - 400H60, KGJ/KGOJ100 - 400H60 KFL50H60 KFL100 - 300H60 KFJ100 - 400H60 KBL50 - 300H60 KBJ100 - 400H60 KCD100 - 400H60, KCD/KCOD100 - 400H60 KCP100 - 600H60, KCP/KCOP100 - 600H60 |
| 2 | Tray connector | LPPH42 LPPH60, LPP/LPOPH60N LPLPH60 LKJH42 LKJH60, LKJ/LKOJH60 LKFJH60 LUF... LUPFJ... LPU... LPMU... |
| 3 | Articulated tray connector | LGJH42, LGJH60, LGPH60, LGP/LGOPH60N, LGFJH60 |
| 4 | Connection plate | BL100 - 600, BL/BLO100 - 600N |
| 5 | End plate | BZK100 - 600, BZK/BZKO100 - 600N |
| | System fittings for trays, such as: elbows, reduction elbows, tees, reduction tees, four-way pieces, reductions, bend elements, bends, bypasses, split connectors, plugs, etc. | KK... KM... KR... TK... TR... TP... CZK... CZP... RK... EL..., LL..., LU... OP... LR... ZKL... etc. |
| 7 | Covers for trays and fittings | PK..., PZK... PKK..., PZKK... PKP... PTK..., PZTK... PCZP... PCZK..., PZCZK... PRK..., PTR..., PKR... etc. |
| 8 | Cover fastening | ZPN..., ZPD..., ZAP... |
| 9 | Cover latches | ZAMK... |
| 10 | Partitions for trays and fittings (partitions fixing with mushroom head screws + serrated face nut SGK6x... max every 600 mm) | PG... PL... PGK... |
| 11 | Partition connector | LPG, LPKD |
| MESH TRAY SYSTEM | | |
| 12 | Mesh tray | KDS60 - 600H60, KDS/KDSO60 - 600H60 KDSZ60 - 400H60 KGS60 - 100H60 KSG60 - 600H60 |
| 13 | Mesh tray connector | USSP USSN, USSN/USSO USSPW, USSPW/USSPWO USKS LKSUC..., PKKS, PSKS, PDKS L1KD..., L2KD |
| 14 | Mesh tray fittings: - made by cutting rods and bolting with brackets | - number of cut-outs: 2-12, USSN, USSN/USSO, USSPW, USSPW/USSPWO, ZS, ZS/ZSO, USSW, PLC..., PLS, PKKS, PSKS, PDKS |

| | | |
|-----------------------------|---|--|
| | - by using system fittings: elbows, tees, plugs and clamping brackets | - KKS... TKS... ZKL... PDKS etc. |
| | Drop-out plate | ZKSN... |
| | Grounding clamp | UUS |
| 15 | Partitions for mesh trays (partitions fixing with ZS/ZSO clamping pieces max every 600 mm) | PG... |
| 16 | Partition connector | LPG, LPD |
| RACK SYSTEM | | |
| 17 | Cable rack | DGOD100 - 400H60, DGOP100 - 600H60, DUJ100 - 400H60, DUD100 - 400H45, DUD100 - 600H60, DUP100 - 600H60, DUP/DUOP100 - 600H60N DFP100 - 400H60 DSH100-400H80 DUVC100 - 600H60 |
| 18 | Rack connector | LDCH... LDC/LDOCH60N LDFCH60 LKDCH..., LKDC/LKDOCH60 LKDFCH60, LLUS... LKU..., LDDK... LPLS... |
| 19 | Articulated rack connector | LGCH..., LGTH..., LGC/LGOCH60N, LDD... |
| 20 | Rack fittings, such as: bend, vertical bend, articulated bend, tee, four-way piece, reduction, drop-out plate, etc. | LD... LPD... TD... CZ... RD... ZDK... etc. |
| 21 | Covers for racks and fittings | PDD..., PZDD... PLD..., PZLD... PTD..., PZTD... PCZD..., PZCZD... PRD..., PZRD... PLPD..., PZLPD... etc. |
| 22 | Cover fastening | ZAP... |
| 23 | Partitions for racks (partitions fixing with SRM6x16 or SGK6x22 screws every 600 mm) | PG... |
| 24 | Partition connector | LPG, LPD |
| WALL TRUNKING SYSTEM | | |
| 25 | Wall trunking | KS115-170H68 |
| 26 | Wall trunking connector | LKS |
| 27 | Wall trunking fittings: elbows, tees, caps, plugs | KWKS... KZKS... KPKS... TSKS... NM... ZK... etc. |
| 28 | Wall trunking cover | PKS |
| 29 | Cover spring bracket | SU |

| ACCESSORIES | | |
|-------------|---------------------------------|---|
| 30 | Extension bracket | WMC 100 - 600, WMC/WMCO 100 – 600 WWS 100 - 600, WWS/WWSO 100 – 600 WWSR100 - 400, WWCT 100 - 600, WWCT/WWCTO 100 – 600 WU 100 - 400, WU/WUO 100 - 400 WPT100, WPT/WPTO 100 WPTKO 100 - 400 WWCH 100 - 600 |
| 31 | Hanger | WC50, WKS60, WKS/WKSO60, WSL75, |
| 32 | Bracket | WFL100 - 600, WFL/WFLO100 - 600 WFC100 - 400, WFC/WFCO100 - 400 |
| 33 | Triangular bracket | UTM, UTM/UTMO, UT, LCKD |
| 34 | Mesh tray bracket | USK, USKH100, UKSPH100 |
| 35 | Ceiling bracket | WPCW..., WPCW/WPCO... WPCE..., WPCE/WPCEO... WPCB... WPDH... |
| 36 | Fastening clamp | ZM, ZM/ZMO |
| 37 | Screw clamp | ZS, ZS/ZSO |
| 38 | Clamp | ZSW |
| 39 | Reinforced channel | CWP40H22/... CWP40H40/..., CWP/CWOP40H40/..., CMP41H21/..., CMP41H41/... CT70H50/... |
| 40 | Channel connector | LC... |
| 41 | Mounting profile | PMC..., PMC/PMCO... PMCN... |
| 42 | I-beam | DPH... |
| 43 | I-beam fastening clamp | NKH |
| 44 | I-beam bracket adapter | OD |
| 45 | Bracket | UPW, UPW/UPWO UPWK, UPWK/UPWKO |
| 46 | Cable clamp | UK1..., UK1/UKO1... UK2..., UK2/UKO2... UKZ1..., UKZ1/UKZO1... |
| 47 | Cable tie | OPK |
| 48 | Rung | SDP..., SDP/SDOP..., SDC..., SDC/SDOC... CMSC41H21/... |
| 49 | Ceiling bracket | USV, USV/USOV US12, US12/USO12 |
| 50 | Articulated rod hanger | WPPG, WPPGV, WPPGV/WPPOV |
| 51 | Angle rod hanger | WKPO |
| 52 | Cable clip | UDF..., UDFB... UEF..., UEFB... |
| 53 | Cable clamp | KSA... |
| 54 | Snap clamp | OZ, OZ/OZO OZS, OZS/OZSO OZM, OZM/OZMO |
| 55 | Thin-walled tubes | RU... |
| 56 | Couplings for thin-walled tubes | LRU... |
| 57 | Elbows for thin-walled tubes | KRUR... |
| 58 | End caps for thin-walled tubes | ZR... |
| 59 | Pipe covers... | NKR... |
| 60 | Clamp | ZK..., ZC..., ZSU3, ZSK1 |
| 61 | Hold down clamp | UDC |
| 62 | Trapeze hanger | WT..., WT/WTO... |
| 63 | Pipe clamp | OBR..., OBS..., OBRK... |
| 64 | Head plate | PSUN, PSUN/PSUNO, PSEN, PSCN |
| 65 | Protection tray | RO1... |
| 66 | Pressure pin | KM6X15 |
| 67 | Spacer washer | PD11 |
| 68 | Expansion plate | BR... |
| 69 | Box brackets | UP... UPU... UPP... UPPO... |
| | Protective caps | NO... |

| SCREWED ELEMENTS | | |
|------------------|--|---|
| 71 | Bolts/anchors/pins/screws* | SRO... (HK M6/4; KDM) SRBO... (HK M6/0) PSRO... (FBN II; R-HPTIIZF; MTP AP) PSRZ... (FAZ II) GSO... (FDN; DBZ 6/4,5; T-DN) KWBO... (FNA II) SBO... (FBS; HUS-P) SBSO... (FBS) KKG... (HM) MKR... (FMD) SKT... (SFI; SDU) KRN... (FF1) KSKO... (FHY) KSSKO... (R-RBL) WDB... |
| 72 | Expansion sleeves* | TRSO... (HKD; EA II; EM; DM-PRO) TRSK... (HKD; EA II) |
| 73 | Self-drilling screws* | SMD... (S-MD03PZ, ONS) |
| 74 | Anchor bolt* | SKT... |
| 75 | Cartridge nails* | GWT... (R-KNC), GWTS... |
| 76 | Chemical anchors*: Threaded rod, glass ampoule, injection mortar, mesh sleeves | PGS... (FTR) AS (FEB RM) ZIO... (FIS..., R-KEM II) TST..., TSM... |
| 77 | Bolts | SGN... SGF... SGK... SGKF... SM... SRM... SSZ... |
| 78 | Nuts | NS... NR... |
| 79 | Washers | PP... PW... PZZ... |
| 80 | Connection nuts | NL... |
| 81 | Threaded rods | PG... |
| 82 | Smooth rods | PGLO... |

* – trade name used by BAKS

Table 2

| No. | Manufacturer | Cable types |
|-----|---|--|
| 1. | Zakłady Kablowe BITNER Sp z o.o. ul. Friedleina 3/3 30-009 Kraków Poland | NHXH FE180/PH90/E90 MIKA NHXCH FE180/PH90/E90 MIKA (N)HXH FE180/PH90/E90 CERAMIC (N)HXCH FE180/PH90/E90 CERAMIC HDGs FE180/PH120/E90 HDGsekwf FE180/PH120/E90 HTKSH FE180/PH90/E90 HTKSHekw FE180/PH90/E90 BITflame® S FE180/PH120/E90 BITflame® S(St) FE180/PH120/E90 BITflame® AS FE180/PH90/E90 BITflame® AS(St) FE180/PH120/E90 BITflame® 1000 FE180/PH120/E90 BITflame® 1000C FE180/PH120/E90 BITservo® FS FE180/PH90/E90 PGI-H FE180/PH90/E90 Fiber optic cables: BITfiber® Flame CLT SMF BITfiber® Flame CLT MMF |

| | | |
|-----|---|---|
| 2. | DÄTWYLER Kabel+Systeme GmbH Lilienthalstrasse 17 DE-85399 Hallbergmoos Germany | NHXH FE180/E90 (N)HXH FE180/E90 (N)HXH FE180/E30 (N)HXCH FE180/E90 (N)HXCH FE180/E30-E60 JE-H(St)H FE 180/E30-E90 JE-H(St)HRH FE 180 E30-E90 |
| 3. | ELKOND HHK a.s. Oravicka 1228 028 01 Trstena Slovakia | N2XH FE180/P30 N2XH FE180/P60 NHXH FE180/P90, JE-H(St)H FE180/P30 JE-H(St)H FE180/P90 1-CXKH-V SHXKFH-V180 |
| 4. | Kabelwerk EUPEN AG Malmedyer Str. B-4700 Eupen Belgium | NHXH-J FE 180/E90 NHXCH-J FE 180/E90 NHXCH FE 180/E90 (N)HXH FE 180/E90 (N)HXCH FE 180/E90 JE-H(St)H FE 180/E90 |
| 5. | Nexans Deutschland Industries GmbH Kabelkamp 20 30179 Hannover Germany | N2XH E90 N2XH E30 N2XCH E90 N2XCH E90 |
| 6. | FACAB Lynen Dürener Str. 340 D-52249 Eschweiler Germany | NHXH FE 180/E90 NHXCH FE 180/E90 JE-H(St)H FE 180/E90 JE-H(St)HRH FE 180/E90 |
| 7. | PRAKAB PRAŽSKÁ KABELOVNA a.s. Ke Bablu 278 102 09 Praha 15 Czech Republic | (N)HXH PRA FlaDur 1-CSKH-V180-0 P30-R PH120-R B2ca s1d0 PRA FlaDur 1-CSKH-V180-0 P30-R |
| 8. | LEONI Studer AG Herrenmattstrasse 20 CH-4658 Däniken Switzerland | BETAFLAM (N)HXCH FE 180/E90 BETAFLAM (N)HXCH FE 180/E30 - E60 BETAFLAM (N)HXH-J FE 180/E30-E60 JE-H(St)H...Bd FE 180/E30 - E90 JE-H(St)HRH...Bd FE 180/E30 - E90 |
| 9. | TECHNOKABEL S.A. Nasielska 55 04-343 Warsaw Poland | NHXH FE180 PH90/E90 0.6/1 kV NHXH-J FE180 PH90/E90 0.6/1 kV NHXHX FE180 PH90/E90 0.6/1 kV NHXHX-J FE180 PH90/E90 0.6/1 kV NHXCH FE180 PH90/E90 0.6/1 kV (N)HXH FE180 PH90/E90 0.6/1 kV (N)HXH-J 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 NHXHRHX FE180 PH90/E90 0.6/1 kV NHXHRHX-J FE180 PH90/E90 0.6/1 kV JE-H(St)H FE 180 PH90/E30-E90, HTKSH FE180 PH90/E30-E90 HTKSHekw FE180 PH90/E30-E90 HDGs FE180 PH90/E30-E90 300/500V HDGszo FE180 PH90/E30-E90 300/500V HDGsekw FE180 PH90/E30-E90 300/500V HDGsekwzo FE180 PH90/E30-E90 300/500V HDGs-W FE180 PH90/E30-E90 300/500V HDGszo-W FE180 PH90/E30-E90 300/500V, HLGs FE180 PH90/E30-E90 300/500V HLGszo FE180 PH90/E30-E90 300/500V HLGsekw FE180 PH90/E30-E90 300/500V HLGsekwzo FE180 PH90/E30-E90 300/500V Fiber optic cables: FOC-2-SLT-HFFR PH120/E30 9/125 SM FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 |
| 10. | TELE-FONIKA KABLE Sp. z o. o. S.K.A. ul. Wielicka 114 30- 663 Kraków Poland | FLAME-X 950 NHXH FE180 PH90/E90 FLAME-X 950 (N)HXH FE180 PH90/E90 FLAME-X 950 NHXCH FE180 PH90/E90 FLAME-X 950 (N)HXCH FE180 PH90/E90 FLAME-X 950 HTKSH FE180/PH90/E90 FLAME-X 950 HTKSHekw FE180/PH90/E90 |

| | | |
|-----|--|--|
| | | FLAME-X 950 HDGs 300/500V (FE180) PH90 E30-E90 FLAME-X 950 JE-H(St)H Bd FE180/E90 FLAME-X 950 HLGsekw E90 |
| 11. | Fabryka Kabli MADEX s.j. Stefanówka ul. Żurawia 96 05-462 Wiązowna Poland | NHXH FE180 PH90/E90 NHXCH FE180 PH90/E90 HTKSH PH90 HTKSHekw PH90 |
| 12. | KABLOTEK KABLO Alipasa mevkii Sanayi 12 Sokak No:7 Silivri-Istanbul Turkey | NHXH-O FE180/E90 NHXCH-O FE180/E90 (N)HXH-O FE180/E30 JE-H(St)H FE180/E90 JE-H(St)H FE190/E30 LINCH FE180/E90 |
| 13. | Fabryka Kabli ELPAR Sp. z o.o. Ul. Laskowska 1 21-200 Parczew Poland | NHXH E90 NHXCH E90 (N)HXH E90 (N)HXCH E90 HDGs E90 PH90 HTKSH FE180/PH90 |
| 14. | NKT Cables Group, Düsseldorfer Strasse 400, Chempark D-51061 Cologne Germany | NHXH E30 NHXH E90 |
| 15. | VLG Cable Ukraine LCC Mixata str. 15 88015 Uzhhorod, Ukraine | (N)HXH FE180 PH90/E90 0.6/1 kV (N)HXH FE180 PH90/E30 0.6/1 kV JE-H(St)H FE180/E90 JE-H(St)H FE180/E30 |
| 16. | ERSE Kablo Halil Rifat Paşa Mh. Yuzer Havuz Sk. No: 5-9 Şişli / Istanbul Turkey | (N)HXH FE180/E90 (N)HXCH FE180/E90 JE-H(St)H Bd FE180/E90 |

1.1.1. Name and address of the manufacturing site

BAKS cable support structures are manufactured in the production plant:

- BAKS Wytwarzanie Osprzętu Instalacyjno-Elektrotechnicznego, Kazimierz Sielski, ul. Jagodne 5, 05-480 Karczew.

Cables and conductors are manufactured in the production plants:

- Zakłady Kablowe BITNER Sp. z o.o., ul. Krakowska 2, 32-353 Trzyciąż near Kraków,
- DÄTWYLER Kabel+Systeme GmbH, Lilienthalstrasse 17, DE-85399 Hallbergmoos,
- ELKOND HHK a.s., Oravicka 1228, 028 01 Trstena,
- Kabelwerk EUPEN AG, Malmedyer Str. 9, B-4700 Eupen,
- Jeans Deutschland Industries GmbH, Kabelkamp 20, 30179 Hannover,
- FACAB Lynen, Durener Str. 340, D-52249 Eschweiler,
- PRAKAB PRAŽSKÁ KABELOVNA, a.s. Ke Bablu 278, 102 09 Praha 15,
- LEONI STUDER Draht - und Kabelwerk AG, CH-4658 Daniken,
- Fabryka Kabli TECHNOKABEL in Szeřeńsk, ul. Wiatraczna 28, 06- 550 Szeřeńsk near Mława,
- TELE-FONIKA KABLE Sp. z o. o. S.K.A., ul. Wielicka 114, 30- 663 Kraków,
- Fabryka Kabli MADEX Stefanówka ul. Żurawia 96, 05-462 Wiązowna,

- KABLOTEK KABLO Alipasa mevkii Sanayi 12, Sokak No:7 Silivri - Istanbul,
- Fabryka Kabli ELPAR Sp. z o.o. ul. Laskowska 1, 21-200 Parzew,
- NKT cables s.r.o., Průmyslová 1130, 272 01 Kladno; NKT cables a/s, Toftegårdsvej 25, DK-4550 Asnaæs; NKT cables Vrchlabi s.r.o., Člen skupiny NKT, Českých bratři 509, 543 14 Vrchlabi,
- VLG; Transcarpathian Cable Factory LCC, 187 Peremohy str., Storozhnytsia village, Zakarpattia oblast., 894 41 Ukraine,
- ERSE Kablo, Ortaköy Sanayi Bölgesi Elif Sokak No:12 Selimpaşa - Silivri / Istanbul.

1.2. Classification

The cable support structures included in BAKS cable systems are made of materials depending on the method of protection against corrosive atmosphere. In the E30, E60, E90 systems, the products are available in four material versions:

- steel galvanised with the process in accordance with EN ISO 2081,
- steel galvanised with the Sendzimir process according to the PN-EN 10327 standard,
- hot dip galvanised steel PN-EN 1461,
- stainless steel in grades 1.4... (designation according to European standard EN 10088),
- Magnelis coated steel PN-EN 10346:2015-09,
- steel galvanised according to the zinc flake method, PN-EN ISO 10683:2014-09.

The above material versions can be additionally powder coated with polyurethane and epoxy paints or painted with acrylic paints.

Selected types and designations of cables included in the BAKS cable systems are presented in Table 3.

Table 3

| Designation | Cable name |
|---|---|
| HTKSH | Telecommunications (T) station (S) cable (K), unshielded with single wire copper conductors and halogen-free flame retardant low smoking insulation (H) as well as halogen-free flame retardant low smoking sheathing (H) |
| HTKSHekw | Telecommunications (T) station (S) cable (K), shielded (ekw) with single wire copper conductors and halogen-free flame retardant low smoking insulation (H) as well as halogen-free flame retardant low smoking sheathing (H) |
| NHXH | Power cable (N) with copper conductors and double insulation made of mica strip and cross-linked halogen-free flame retardant, low smoking (HX) material as well as halogen-free flame retardant low smoking (H) filling and sheathing |
| NHXCH | Power cable (N) with copper conductors and double insulation made of mica strip and cross-linked halogen-free flame retardant, low smoking (HX) material as well as halogen-free flame retardant low smoking (H) filling and sheathing, with coaxial conductor in the form of a spiral-shaped wrapping on the filling (C) |
| (N)HXH | Power cable (N) with copper conductors and cross-linked flame retardant low smoking (HX) silicone rubber insulation; filler and outer sheath made of halogen-free flame retardant low smoking (H) material |
| (N)HXCH | Power cable (N) with copper conductors and cross-linked flame retardant low smoking (HX) silicone rubber insulation; filler and outer sheath made of halogen-free flame retardant low smoking (H) material. Cable with additional coaxial conductor in the form of a spiral-shaped wrapping on the filling (C) |
| JE-H(St)H | Telecommunications installation cable (JE), insulation and sheath made of halogen-free, flame retardant, low smoking (H) material, with a shared screen in the centre (St) |
| N2XH | Power cable (N) with copper conductors and cross-linked polyethylene (2X) core insulation, halogen-free flame retardant low smoking (H) filling and sheath |
| N2XCH | Power cable (N) with copper conductors and cross-linked polyethylene (2X) core insulation, halogen-free flame retardant low smoking (H) filling and sheath, with coaxial conductor in the form of a spiral-shaped wrapping on the filling (C) |
| HDGs | Cable with single-wire copper conductors (D) with special silicone rubber insulation (Gs) and halogen-free flame retardant low smoking (H) sheath |
| HDGsekw | Cable with single-wire copper conductors (D) with special silicone rubber insulation (Gs) and halogen-free flame retardant low smoking (H) sheath as well as a shared screen in the centre (ekw) |
| HLGs | Cable with multi-wire copper conductors (D) with special silicone rubber insulation (Gs) and halogen-free flame retardant low smoking (H) sheath |
| HLGsekw | Cable with multi-wire copper conductors (D) with special silicone rubber insulation (Gs) and halogen-free flame retardant low smoking (H) sheath as well as a shared screen in the centre (ekw) |
| PH 30 PH 90 PH 120 | Cable ability to maintain circuit integrity (actual current conductivity or signal transmission) according to PN-B-02851-1 expressed in minutes (test according to EN 50200) |
| E 30 E 60 E 90 | Ability of the cable system (cable/conductor + tray/ rack + support structure) to sustain electrical function expressed in minutes (test according to DIN 4102-12) |
| FE 180 | Cable ability to maintain circuit integrity (actual current conductivity or signal transmission) expressed in minutes (test according to PN-IEC 60331-21 in static conditions at 750°C) |

1.3. Marking

BAKS cable support structures are identified on the basis of the BAKS product catalogue. It is impossible to apply the product symbol on the elements due to the production technology; the products are mechanically marked only with the company logo or/and the product identification sticker.

Product marking appears on the component or on the packaging and provides the following information:

- Name and address of the manufacturer,
- Product symbol,
- Product article number,
- Packaging quantity.

Cable marking contains the following information:

- Cable symbol with the designation: (number of pairs) x (number of conductors in a pair) x (diameter of conductor),
- Trademark,
- Year of production.

2. INTENDED USE OF THE PRODUCT

2.1. Purpose

BAKS cable supporting structures together with power and telecommunication cables produced by the manufacturers listed in Table 2 of this CNBOP-PIB National Technical Assessment can be used as cable systems in power supply and control systems for fire protection devices in buildings.

The cable systems described in this CNBOP-PIB National technical assessment are classified as E30, E60, E90 circuit integrity maintenance class according to DIN 4102- 12, and according to § 187.3. of the Regulation of the Minister of Infrastructure of 12 April 2002 on the technical conditions to be met by buildings and their location (consolidated text Dz. U. No. 2022, item 1225), as ensuring continuity of electricity supply or signal transmission for the time required to start and operate the device, determined respectively at 30, 60 and 90 minutes.

The assessment of cable systems in terms of continuity of power supply or signal transmission, taking into account the type of substrate and the expected fixing method has been carried out in accordance with the conditions specified in the Polish Standard for fire resistance testing PN-EN 1363-1:2012 and PN-EN 1363-1:2020-07 Fire resistance tests - Part 1. General requirements and DIN 4102-12:1998 Fire performance of construction materials and components - Part 12: Maintenance of the circuit integrity of cable systems - Requirements and tests.

2.2. Usage scope and conditions

Conductors/cables and cable routes may be used in cable systems provided that:

- they meet the requirements of this CNBOP-PIB National Technical Assessment, which should be verified by positive results of tests of the cable system (cable with its attachment) according to annex 1, 2 or 3 of this CNBOP-PIB National Technical Assessment) according to the PN-EN 1363-1:2012/PN-EN 1363-1:2020-07 and DIN 4102-12:1998 standards, and
- cable manufacturers or suppliers performed conformity assessment of the product's performance, which resulted in the issuance of a certificate of conformity with the technical approval for the product or a national certificate of constancy of performance in conformity with the national technical assessment for the product.

Anchors/bolts/screws/nails of verified fire resistance can be used in cable systems. The verification must be appropriately documented, depending on the assessment system (for assessment system 1, the certificate of constancy of performance or the national certificate of constancy of performance, for the 2+ system, the certificate of conformity of the factory production control with the European Technical Assessment or the national certificate of conformity of the factory production control with the national technical assessment).

It is possible to lay fire-resistant cables together with non-fire-resistant cables in BAKS cable systems provided that the requirements described in the expert report MPA iBMB No. 2400/792/18-CM dated 25.10.2018 issued by Materialprüfanstalt für das Bauwesen (MPA Braunschweig), Beethovenstraße 52, 38106 Braunschweig (the report is valid until 25.10.2023) are met.

Annex 1 contains the drawings of standard BAKS cable support structures and classifications of cable systems according to DIN 4102-12:1998, depending on the used configuration of the standard cable supporting structure and cable.

Annex 2 contains the drawings of special BAKS cable support structures and classifications of cable systems according to DIN 4102-12:1998, depending on the used configuration of the special cable supporting structure and cable.

In Annex 3, since the DIN 4102-12:1998 standard does not provide for:

- E120 classification, Tables 1-19 present the result of the test in the form of the achieved duration of continuity of electricity supply under fire conditions, depending on the special cable support structure and cable configuration used,
- E classification for fibre optic cables, Tables 20-21 present the time taken to maintain adequate functionality, i.e. a maximum change in attenuation of $\leq 1\text{dB/m}$ for single-mode fibre optics and $\leq 2\text{dB/m}$ for multimode fibre optics (in accordance with PN-EN 50582:2016-12), depending on the special cable support structure and cable configuration used,

Annex 4 contains connection drawings for BAKS trays, cable racks, channel sections and mesh trays and their fixing method to support structures.

2.3. Use, installation and maintenance

BAKS cable systems must be fixed to a concrete substrate of class > C25 or natural stone. It is permitted to mount the cable systems to other substrates of adequate strength confirmed by the certificate of load bearing capacity equal at least to the resistance of the cable systems. Basic parameters for fixing trays are presented in Table 6.

Basic parameters for fixing racks are presented in Table 7.

Basic parameters for other fixing elements are presented in Table 8.

Basic parameters for fixing wire mesh trays are presented in Table 9.

2.3.1. Boundary conditions:

1. Brackets and extension brackets should be fixed to a solid ceiling or wall using certified anchor bolts selected to fit the substrate in accordance with the manufacturer's instructions,
2. M8, M10, M12 wall anchors and sleeves should be recessed in concrete at least 60 mm and M6 – at least 30 mm. The tension force per anchor should not exceed 500 N. Alternatively, anchors with verified fire safety specifications may be used. The installation instructions of the manufacturer of the approved anchors must be followed at all times,
3. When mounting the cable system to a concrete floor, a channel section must be used as an intermediate element between the channel and the floor. The channel must be firmly fixed to the ground and additionally twisted with the cable route. Distance between channels according to tables 6-9,
4. When laying cables or conductors with fire resistance rating E30 - E90 outside the building (outside a separated fire zone), it is necessary to use a weather-resistant cable routes that protect the cable installation against UV radiation. Cable segregation is to be maintained and the attachment to the ground is to ensure stability of the route,
5. Standard support structures using PGM threaded rods... should be made taking into account the permissible strength of the rods (Table 4); for E90 (6N/mm²) or E30-E60 (9N/mm²) structures,

Table 4

| PERMISSIBLE LOAD FOR PGM THREADED RODS | | | | |
|--|--------------------------------------|-------------------------------|-----|-----|
| d | Rod cross-section [mm ²] | E30 | E60 | E90 |
| | | Permissible PGM rod load [kg] | | |
| M6 | 20.1 | 18 | 18 | 12 |
| M8 | 36.6 | 33 | 33 | 22 |
| M10 | 58 | 52 | 52 | 35 |
| M12 | 84.3 | 76 | 76 | 50 |

6. It must be ensured that BAKS cable systems are not impaired in their circuit integrity maintenance class by falling construction elements,
7. BAKS cable systems can be made as suspended structures- fixed to ceilings and slab roofs, wall mounted horizontally, vertically or diagonally. Fastening to steel structures and sheet metal is also permitted.

2.3.2. Permitted for BAKS cable systems:

1. Fastening to another substrate of at least the same fire resistance class (fire resistance R30, R60, R90) as the cable system using certified anchors suitable for the substrate and load,
2. Use of anchoring components (nails, screws, sleeves, etc.) from other manufacturers with documented fire resistance and load-bearing capacity in the respective substrate,
3. Laying the cables in layers in a tray or rack while maintaining the permissible load for the E30-E90 cable route,
4. Fixing cables with metal brackets in halogen-free plastic strips and pipes,
5. Laying trays/racks up to 400 mm wide on horizontal CWP/CWOP40H40 or CMP41H41 channels with the maximum length of 2000 mm (for single level support structures only),
6. Laying trays/racks up to 400 mm wide on horizontal CWP40H22 or CMP41H21 channels with the maximum length of 500 mm,
7. Fixing of the BAKS PMO, PMPO and PMKO junction boxes directly to the sides of racks, trays and channels or by means of system clamps (details in a separate CNBOP-PIB National Technical Assessment),
8. Fixing fire protection system components not exceeding 3.5 kg (e.g. emergency light fixtures) to the base of the CWP/CWOP40H40 or CMP41H41 channel below the maximum load for the structure,
9. Fixing threaded rods directly to the substrate by means of appropriate, certified anchoring elements, using USV/USOV, US12/USO12 ceiling brackets or by means of WPPG, WPPGV/WPPOV, WKPO articulated rod hangers (only to walls),
10. Use of halogen-free plastic cable ties to separate cables/conductors on trays, racks and wire mesh trays,
11. Using, in place of a single tray or rack with the maximum width as shown in Annexes 1 and 2, two trays or racks, the total width of which should not exceed the maximum width as shown in the drawings, while maintaining other structural parameters as shown in the drawing (e.g. total load of both trays or racks must be less than or equal to the loads shown in the drawing),

12. Joining PGM threaded rods with NLM6, NLM8, NLM10, NLM12 connecting nuts locked with at least one NSM... nut (the maximum length of joined rods is not limited),
13. Making additional holes in KB-type solid trays in order to fix them to the support structure, connect them to other trays or fittings, attach a PMO, PMPO, PMKO junction box,
14. use of NO protective caps to protect the sharp edges of channels, racks, brackets and extension brackets,
15. Angled route laying (elevation change) using a support structure as shown in the figure 1 and 2. The sides of the trays and racks should be connected with LG... articulated connectors and the bases of the trays should be secured with BZK/BZKO... end plates. (does not apply to mesh trays),

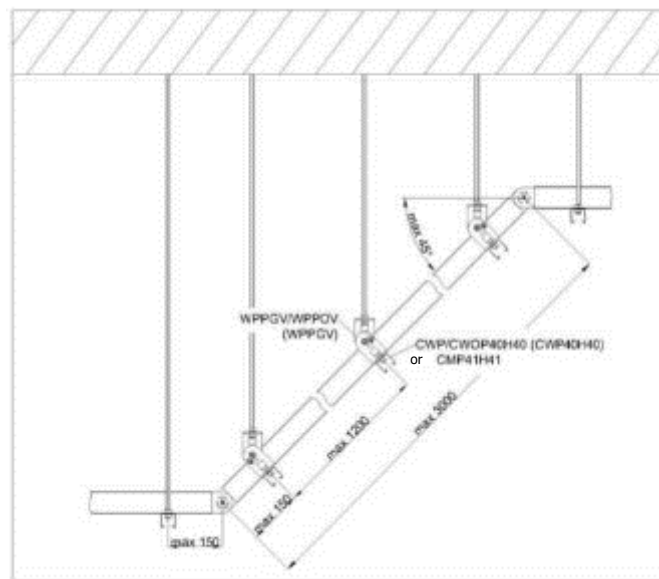


Figure 1. Angled route laying
Source: manufacturer's materials.

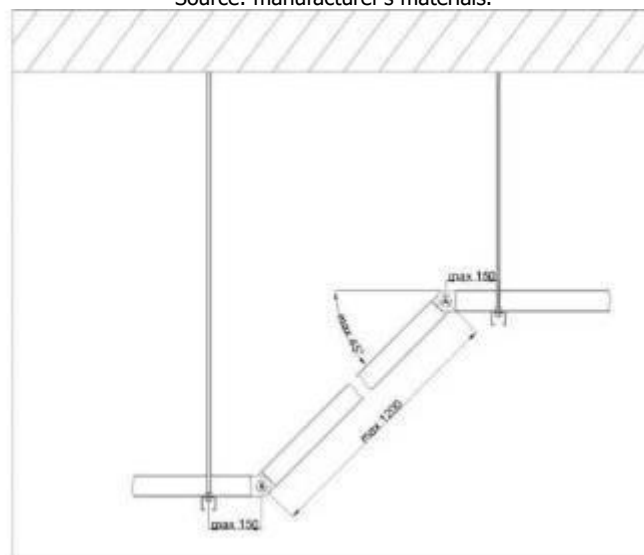


Figure 2. Angled route laying
Source: manufacturer's materials.

16. For special BAKS cable systems, it is permitted to use alternately trays/racks made of thicker sheet metal, according to Table 5 (strength parameters of trays/racks are transferred together with cable/conductor classification on tray/rack made of thinner sheet metal).

Table 5

| Tray/rack type | Sheet thickness [mm] | Tray/rack type | Sheet thickness [mm] | Tray/rack type | Sheet thickness [mm] | Tray/rack type | Sheet thickness [mm] |
|----------------|----------------------|----------------|----------------------|----------------|----------------------|----------------|----------------------|
| KGL100H42 | 0.7 | KGJ100H42 | 1.0 | | | | |
| KGL/KCL50H60 | 0.7 | KGJ/KCJ50H60 | 1.0 | | | | |
| KGL/KGOL100H60 | 0.7 | KGJ/KGOJ100H60 | 1.0 | | | | |
| KGL/KGOL150H60 | 0.7 | KGJ/KGOJ150H60 | 1.0 | | | | |
| KGL/KGOL200H60 | 0.7 | KGJ/KGOJ200H60 | 1.0 | | | | |
| KGL/KGOL300H60 | 0.7 | KGJ/KGOJ300H60 | 1.0 | | | | |
| KCL100H42 | 0.7 | KGJ100H42 | 1.0 | | | | |
| KGL/KCL50H60 | 0.7 | KCJ/KCOJ50H60 | 1.0 | KCD50H60 | 1.2 | KCP50H60 | 1.5 |
| KCL/KCOL100H60 | 0.7 | KCJ/KCOJ100H60 | 1.0 | KCD100H60 | 1.2 | KCP/KCOP100H60 | 1.5 |
| KCL/KCOL150H60 | 0.7 | KCJ/KCOJ150H60 | 1.0 | KCD150H60 | 1.2 | KCP/KCOP150H60 | 1.5 |
| KCL/KCOL200H60 | 0.7 | KCJ/KCOJ200H60 | 1.0 | KCD200H60 | 1.2 | KCP/KCOP200H60 | 1.5 |
| KCL/KCOL300H60 | 0.7 | KCJ/KCOJ300H60 | 1.0 | KCD300H60 | 1.2 | KCP/KCOP300H60 | 1.5 |
| | | KCJ/KCOJ400H60 | 1.0 | KCD400H60 | 1.2 | KCP/KCOP400H60 | 1.5 |
| KFL50H60 | 0.7 | KFJ50H60 | 1.0 | | | | |
| KFL100H60 | 0.7 | KFJ100H60 | 1.0 | | | | |
| KFL150H60 | 0.7 | KFJ150H60 | 1.0 | | | | |
| KFL200H60 | 0.7 | KFJ200H60 | 1.0 | | | | |
| KFL300H60 | 0.7 | KFJ300H60 | 1.0 | | | | |
| KBL50H60 | 0.7 | KBJ50H60 | 1.0 | KBD50H60 | 1.2 | KBP50H60 | 1.5 |
| KBL100H60 | 0.7 | KBJ100H60 | 1.0 | KBD100H60 | 1.2 | KBP100H60 | 1.5 |
| KBL150H60 | 0.7 | KBJ150H60 | 1.0 | KBD150H60 | 1.2 | KBP150H60 | 1.5 |
| KBL200H60 | 0.7 | KBJ200H60 | 1.0 | KBD200H60 | 1.2 | KBP200H60 | 1.5 |
| KBL300H60 | 0.7 | KBJ300H60 | 1.0 | KBD300H60 | 1.2 | KBP300H60 | 1.5 |
| | | KBJ400H60 | 1.0 | KBD400H60 | 1.2 | KBP400H60 | 1.5 |
| DUD100H45 | 1.2 | DUP100H45 | 1.5 | | | | |
| DUD200H45 | 1.2 | DUP200H45 | 1.5 | | | | |
| DUD300H45 | 1.2 | DUP300H45 | 1.5 | | | | |
| DUD400H45 | 1.2 | DUP400H45 | 1.5 | | | | |
| DUJ100H60 | 1.0 | DUD100H60 | 1.2 | DUP/DUOP100H60 | 1.5 | | |
| DUJ200H60 | 1.0 | DUD200H60 | 1.2 | DUP/DUOP200H60 | 1.5 | | |
| DUJ300H60 | 1.0 | DUD300H60 | 1.2 | DUP/DUOP300H60 | 1.5 | | |
| DUJ400H60 | 1.0 | DUD400H60 | 1.2 | DUP/DUOP400H60 | 1.5 | | |
| | | DUD500H60 | 1.2 | DUP500H60 | 1.5 | | |
| | | DUD600H60 | 1.2 | DUP600H60 | 1.5 | | |
| DGOD100H60 | 1.2 | DGOP100H60 | 1.5 | | | | |
| DGOD200H60 | 1.2 | DGOP200H60 | 1.5 | | | | |
| DGOD300H60 | 1.2 | DGOP300H60 | 1.5 | | | | |
| DGOD400H60 | 1.2 | DGOP400H60 | 1.5 | | | | |

17. Making fittings in mesh trays by cutting and joining appropriate wires - according to BAKS catalogue.
18. Fixing light fixtures with weight up to 20 kg made of non-combustible materials to horizontal channel sections forming part of the support structures (structure number 9 in Annex 2) provided that the permissible load of the structure is not exceeded.

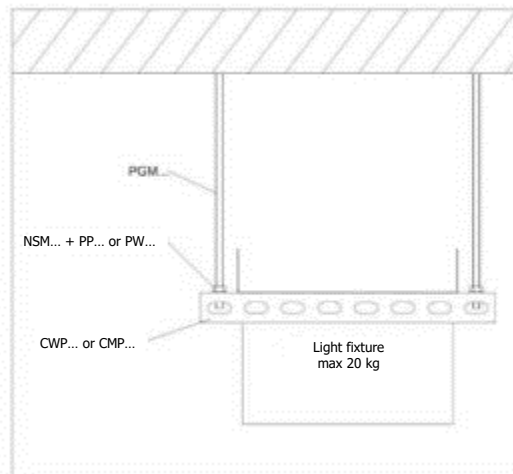


Figure 3. Fixing the light fixture to the cable route support structure
Source: manufacturer's materials.

2.3.3. Prohibited for BAKS cable systems:

1. Use of a shared support structure for a route constituting an E30-E90 cable system and a route without fire resistance functionalities,
2. Configure routes using elements from Table 1 but not included in Annexes 1 and 2,
3. Modify the shape of elements for making fittings (not applicable to wire mesh channels).
Fittings for perforated and solid trays and cable racks must be made using the provided system elements. Changing route level (elevation change) should be carried out with the use of hinged connectors. Tray edges should be protected with end plates or protective tape.

The permissible loads and technical parameters of BAKS cable support structures should be in accordance with Tables 6- 9.

Table 6

| BASIC TRAY FIXING PARAMETERS | | |
|--|---|------------------|
| | Symbol | Sheet th. |
| Tray types | KGL/KCL50H60 * | 0.7 mm |
| | KCL100 - 300H60, KCL/KCOL100 -300H60 * | 0.7 mm |
| | KLFL75H60 * | 0.7 mm |
| | KGL100H42 * | 0.7 mm |
| | KGL100 - 300H60, KGL/KGOL100 - 300H60 * | 0.7 mm |
| | KFL50H60 * | 0.7 mm |
| | KFL100-300H60 * | 0.7 mm |
| | KBL100-300H60 * | 0.7 mm |
| | KCJ100 - 400H60, KCJ/KCOJ100 - 400H60 * | 1.0 mm |
| | KGJ100 - 400H60, KGJ/KGOJ100 - 400H60 * | 1.0 mm |
| | KFJ100-400H60 * | 1.0 mm |
| | KBJ100-400H60 * | 1.0 mm |
| | KCD100 - 400H60, KCD/KCOD100 - 400H60 * | 1.2 mm |
| KCP100 - 600H60, KCP/KCOP100 - 600H60 | 1.5 mm | |
| Permitted tray perforation | 15 ± 5% Not applicable to KB... trays | |
| CONNECTING TRAYS (details in Annex 4) | | |
| Up to (including) 1.2 mm sheet thickness by means of insertion and screwing with M6 bolts (Annex 4) | | |
| Up to (including) 1.5 mm sheet thickness by means of connectors, connecting plates and M6 bolts (Annex 4) | | |
| Connector type | LPPH, LPP/LPOPH60N, LPLPH60, LPU. | |
| Type of connecting plate depending on the width of the tray | BL100 - 600, BL/BLO100 - 600N | |
| Connecting bolt type | Bolts: SGNM6x12 or SGK6x12 in cl.5.8 | |
| HORIZONTAL TRAYS FIXING (details in Annex 1 and 2) | | |
| Max. tray load | 2 kg/m *, 5 kg/m *, 10 kg/m, 20 kg/m *, 25 kg/m * | |
| Max. support spacing | 1.2 m; 1.5 m*; 1.7 m* | |
| Method of fixing to the support structure | Fixing as shown in the drawings in Annexes 1, 2, 4 | |
| Max. number of route levels per structure | 3 levels, 4 levels (for structure no 32 and 33 according to Annex 2) | |
| Max. tray width or sum of tray widths | 600 mm * | |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system | |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * | |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO..., SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM..., PGLO... Or other anchoring elements with proven fire resistance and load-bearing capacity | |
| Fixing to steel structure | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Clamp ZK..., ZC... Threaded rod PGM..., Hold down clamp UDC Channel CWP/CWOP... Clamp OBRK... (In accordance with Annex 2) | |
| Fixing to trapezoidal sheet | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Trapeze hanger WT... + PGM... rod hanger pin (In accordance with Annex 2) | |
| Fixing to pipe structures | Pipe clamp OBR... Reinforced channel CWP/CWOP40H40 (CWP40H40) or/and CMP41H41 (In accordance with Annex 2) | |
| Fixing cables/conductors to the tray | not required | |

| | |
|--|--|
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |
| VERTICAL TRAY FIXING* (details in Annex 2 - structure 86) | |
| Bracket type | UT |
| Max. tray load | 20 kg/m |
| Max. support spacing | 1.5 m |
| Fixing tray to bracket | Bolts: SGNM6x12 or SGKM6x12 in cl.5.8 |
| Max. tray width | 400 mm |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C25 or other substrate with the required fire resistance * |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete, plasterboard structure | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO..., SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM... Or other anchoring elements with proven fire resistance |
| Fixing cables/conductors to the tray | Brackets UDF, UEF max. every 600 mm |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |

* – special constructions

Table 7

| BASIC RACK FIXING PARAMETERS | | |
|---|---|------------------|
| | Symbol | Sheet th. |
| Rack types | DUJ100-400H60 * | 1.0 mm |
| | DGOD100-400H60 * | 1.2 mm |
| | DUD100-400H45 * | 1.2 mm |
| | DUD100-600H60 * | 1.2 mm |
| | DUP100-600H60 * | 1.5 mm |
| | DUP/DUOP100-600H60 * | 1.5 mm |
| | DGOP100 - 600H60 | 1.5 mm |
| | DFP100-400H60 * | 1.5 mm |
| | DUVC100-600H60 * | 2.0 mm |
| Max. rungs spacing | 150 mm; 300 mm* | |
| CONNECTING RACKS (details in Annex 4) | | |
| With connectors, screwed with M8 bolts (Annex 4) | | |
| Connector type | LDCH45, LDCH60, LDC/LDOCH60N | |
| Connecting bolt type | Bolts: SGNM8x14 or SGKM8x14 in cl.5.8 - 4 pcs. per LDC/LDOCH60N (LDCH60) connector | |
| HORIZONTAL RACKS FIXING (details in Annex 1 and 2) | | |
| Max. rack load | 10 kg/m; 20 kg/m; 25 kg/m*; 30 kg/m*, 40 kg/m* | |
| Max. support spacing | 1.2 m; 1.5 m*; 1.7 m*; | |
| Fixing rack to support structure | ZM/ZMO (ZM) clamp as shown in the drawings (Annex 4) - 1 pc. for width of 100 mm - 2 pcs. for width of 200 - 600 mm | |
| Number of route levels per structure | 3 levels, 4 levels (for structure no 32 and 33 according to Annex 2) | |
| Max. rack width or sum of rack widths | 600 mm * | |

| | |
|--|---|
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO..., SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM..., PGLO... Or other anchoring elements with proven fire resistance and load-bearing capacity |
| Fixing to steel structure | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Clamp ZK..., ZC... Threaded rod PGM... Hold down clamp UDC Channel CWP/CWOP... (CWP...) Clamp OBRK... (In accordance with Annex 2) |
| Fixing to trapezoidal sheet | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Trapeze hanger WT... + PGM... rod hanger pin (In accordance with Annex 2) |
| Fixing cables/conductors to the rack | Not required (structure 23 and structure 40 - fixing as for vertical systems) |
| Fixing to pipe structures | Pipe clamp OBR... Reinforced channel CWP/CWOP40H40 (CWP40H40) or/and CMP41H41 (In accordance with Annex 2) |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results |
| VERTICAL RACKS FIXING (details in Annex 1 and 2) | |
| Bracket type | UTM/UTMO (UTM), UT, LCKD |
| Max. rack load | 20 kg/m; |
| Max. bracket spacing | 1.2 m; 1.5 m*; 3.5 m* |
| Fixing rack to bracket | Bolts: SGNM8x14 or SGKM8x14 in cl.5.8 |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete, plasterboard structure | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO..., SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM..., PGLO... Or other anchoring elements with proven fire resistance and load-bearing capacity |
| Fixing to steel structure* | Threaded rod PGM... Hold down clamp UDC Triangular bracket UTM/UTMO (UTM), UT or LCKD Channel CWP/CWOP... (CWP...) or CMP41H41... (In accordance with Annex 2) |
| Fixing cables on rack | Fix the cables max. every 300 mm or every 600 mm* using brackets: UK1/UKO1...(UK1...)-max. number of cables in one bracket 3 pcs. or 5 pcs. up to 20 mm diameter |

| | |
|---|--|
| | UK1/UKO2...(UK2...)-max. number of cables in one bracket 3 pcs. or 5 pcs. up to 20 mm diameter (permitted use of RO1... protection trays) |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |

* – special constructions

Table 8

| BASIC MESH TRAY FIXING PARAMETERS* | |
|--|--|
| | Galvanised steel rod |
| Mesh tray types | KDS/KDSO60 - 600H60 KSG60 - 600H60 KDSZ60 - 400H60 KGS60 - 100H60 |
| Wire diameter | Ø 4- 5 mm |
| CONNECTING MESH TRAYS (details in Annex 4) | |
| Connector type | Joint connector USSN, USSN/USSO Joint connector USSPW, USSPW/USSPWO Joint connector USSW, USSW/USSWO* |
| HORIZONTAL MESH TRAYS FIXING (details in Annex 2) | |
| Max. mesh tray load | 20 kg/m - KDS/KDSO100-600H60 (KDS100-600H60), KSG100-600H60, KDSZ100-400H60 2 kg/m - KDS/KDSO60H60 (KDS60H60), KSG60H60, KDSZ60H60 5 kg/m- KGS60-100H60 |
| Max. support spacing | 1.5 m |
| Mesh tray fixing | - Clamp ZS/ZSO (ZS) - Hanger WKS/WKSO60 (WKS60) - Clamp ZSW - Joint connector USSPW/USSPWO (USSPW) - Bracket USSP - Bracket USKPH... - mounting profile PMC/PMCO (PMC) - mesh tray bracket USK, USKH... |
| Number of route levels per structure | 3 levels, 4 levels (for structure no 32 and 33 according to Annex 2) |
| Max. mesh tray width or sum of mesh tray widths | 600 mm |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO, SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM..., PGLO... Or other anchoring elements with proven fire resistance and load-bearing capacity |
| Fixing to steel structure | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Clamp ZK..., ZC... Threaded rod PGM... Hold down clamp UDC Channel CWP/CWOP... (CWP...) (In accordance with Annex 2) |
| Fixing to trapezoidal sheet | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Trapeze hanger WT... + PGM... rod hanger pin (In accordance with Annex 2) |
| Fixing to pipe structures | Pipe clamp OBR... Reinforced channel CWP/CWOP40H40/... (CWP40H40/...) or/and CMP41H41 (In accordance with Annex 2) |
| Fixing cables/conductors to the tray | Not required (structure 21 and structure 24 - fixing as for vertical systems) |

| | |
|--|---|
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |
| VERTICAL MESH TRAYS FIXING (details in Annex 2) | |
| Bracket type | mounting profile PMC/PMCO (PMC), WKS, WKS/WKSO60, USKH100 |
| Max. tray load | 20 kg/m - KDS/KDSO100-600H60 (KDS100-600H60), KSG100-600H60 2 kg/m - KDS/KDSO60H60 (KDS60H60), KSG60H60 |
| Max. support spacing | 1.5 m |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, duct brick, duct concrete, SILKA brick, porotherm, aerated concrete, plasterboard structure | Expansion bolts PSROM..., SRO..., SRBO..., PSRZ..., SKT..., Concrete bolts SBO..., SBSO... Anchor bolts MKR..., KRN... Expansion sleeve TRSO..., TRSK..., KSKO... Anchors KSSKO..., GSO..., KWBO... Chemical anchors PGS..., AS, ZI300 Threaded rods PGM... (through wall) Or other anchoring elements with proven fire resistance and load-bearing capacity |
| Fixing cables to the mesh tray | Fix the cables max. every 600 mm using brackets: UKZ1/UKZO1... (UKZ1...) - max. number of cables in one bracket 3 pcs. or 5 pcs. up to 20 mm diameter |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E30, E60 system | 9 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |
| Max. load for bolts, threaded rods, sleeves and anchor bolts in E90 system | 6 N/mm ² of bolt (rod) cross-section – For standard solutions. For special solutions, loads according to test results. |

* – special constructions

Table 9

| | |
|---|--|
| BASIC CABLE BRACKETS AND CLAMPS FIXING PARAMETERS CEILING OR WALL MOUNTING | |
| CABLE CLAMPS AND BRACKETS - VERTICAL AND HORIZONTAL CABLE/CONDUCTOR ROUTING (details in Annex 1 and 2) | |
| Clamp/bracket types | UDF..., UDFB... UEF..., UEFB... KSA... |
| Cable diameters possible to install on brackets | Diameter: from Ø5 mm to Ø42 mm for: UDF..., UDFB..., UEF..., UEFB...; Diameter: from Ø5 mm to Ø55 mm for: KSA... max. number of cables per KSA clamp 3 pcs. with diameters from 20 mm or 5 pcs. with diameters up to 20 mm |
| Max. bracket spacing | 300 mm; 600 mm*, 800 mm* |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |

| | |
|--|---|
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, aerated concrete, silicate, plasterboard, duct brick, duct concrete, SILKA brick, porotherm | <p>Anchor bolts SR0M... Anchor bolts SRB0M... Expansion bolt PSR0M... Sleeve TRS0M... + threaded rod PGM... Sleeve TRSK... + threaded rod PGM... Frame anchor KRN... Expansion anchor GSO... Nail anchor KWBO... Concrete bolts SBO..., SBSO... Concrete screw WDB... Anchor Bolt SKTO..., SKTZO... Metal anchor bolt MKR... Plasterboard anchor KKG... Anchor KSKO..., KSSKO... Threaded rods PGM..., PGLO... Cartridge nails GWT... Or other anchoring elements with proven fire resistance and load-bearing capacity</p> |
| Fixing to steel structure | <p>Clamp ZK..., ZC..., ZSU3 Self-drilling screw SMD ... (or other anchoring elements with proven fire resistance and load bearing capacity) Nail gun nails GWTS... (or other anchoring elements with proven fire resistance and load bearing capacity)</p> |
| Fixing to sheet metal | <p>Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Trapeze hanger WT... + PGM... rod hanger pin</p> |
| CABLE CLAMPS - HORIZONTAL CABLE/CONDUCTOR ROUTING (details in Annex 1 and 2) | |
| Types of clamps | <p>OZ/OZO (OZ) OZS/OZSO (OZS) OZM/OZMO (OZM)</p> |
| Max. load capacity | <p>OZ/OZO (OZ) - 6 kg/m OZS/OZSO (OZS)- 2 kg/m OZM/OZMO (OZM)- 1 kg/m</p> |
| Max. clamp spacing | 300 mm; 600 mm*, 800 mm* |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |
| Fixing to substrate: concrete, cracked concrete, stone, solid brick, aerated concrete, silicate, plasterboard, duct brick, duct concrete, SILKA brick, porotherm | <p>Anchor bolts SR0M... Anchor bolts SRB0M... Expansion bolt PSR0M... Sleeve TRS0M... + threaded rod PGM... Sleeve TRSK... + threaded rod PGM... Frame anchor KRN... Expansion anchor GSO... Nail anchor KWBO... Concrete bolts SBO..., SBSO... Concrete screw WDB... Anchor Bolt SKTO..., SKTZO... Metal anchor bolt MKR... Plasterboard anchor KKG... Anchor KSKO..., KSSKO... Threaded rods PGM..., PGLO... Cartridge nails GWT... Or other anchoring elements with proven fire resistance and load-bearing capacity</p> |
| Fixing to steel structure | <p>Clamp ZK..., ZC... Self-drilling screw SMD ... (or other anchoring elements with proven fire resistance and load bearing capacity) Nail gun nails GWTS... (or other anchoring elements with proven fire resistance and load bearing capacity)</p> |
| Fixing to sheet metal | <p>Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) Trapeze hanger WT... + PGM... rod hanger pin</p> |
| RACK RUNK FIXING (details in Annex 1 and 2) | |
| Rung type | SDP/SDOP... (SDP...), SDC/SDOC... (SDC...), CMSC41H21... |
| Rung fixing | Maximum spacing between rung anchors – 250 mm |
| Max. rungs spacing | 300 mm; 600 mm*, 800 mm* |
| Cable routes location | The location of cable routes must be designed/installed in such a way as to exclude negative impacts from other building elements or equipment which could lead to damage to the cable system |
| Substrate type | Concrete class min. B20/C16-C20 or other substrate with the required fire resistance * |

| | |
|--|--|
| Fixing cables on rung | Fix the cables max. every 300 mm or every 600 mm* using brackets: UK1/UKO1... (UK1...) - max. number of cables in one bracket UKO1... (UK1...) -3pcs. or 5pcs. up to 20 mm diameter UK1/ UKO2...(UK2...)-max. number of cables in one bracket UKO2...(UK2...) - 3 pcs. or 5 pcs. up to 20 mm diameter (permitted use of RO1... protection trays) |
| Fixing to substrate: concrete, stone, solid brick, aerated concrete, silicate, plasterboard, duct brick, duct concrete, SILKA brick, porotherm, steel structure elements | Anchor bolts SR0M... Anchor bolts SRBOM... Expansion bolt PSROM... Frame anchor KRN... Expansion anchor GSO... Nail anchor KWBO... Concrete bolts SBO..., SBSO... Concrete screw WDB... Metal anchor bolt MKR... Plasterboard anchor KKG... Anchor KSKO..., KSSKO... Threaded rods PGM..., PGLO... Or other anchoring elements with proven fire resistance and load-bearing capacity |
| Fixing to steel structure | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) |
| Fixing to sheet metal | Self-drilling screw SMD... (or other anchoring elements with proven fire resistance and load-bearing capacity) |

* – special constructions

3. PRODUCT PERFORMANCE CHARACTERISTICS AND METHODS APPLIED TO THEIR ASSESSMENT

3.1. Maintenance of the circuit integrity of cable systems

Table 50

| No. | Properties | Requirements | Test methods |
|-----|--|---|---|
| 1. | Maintenance of the circuit integrity of cable systems (ensuring continuity of power supply or signal transmission for the time required for the starting and operation of the fire protection device) | Class E30, E60, E90 according to DIN 4102- 12:1998 30, 60 and 90 minutes according to Polish regulations | PN-EN 1363-1:2012/ PN-EN 1363-1:2020-07 and DIN 4102-12:1998 |

4. PACKAGING, TRANSPORT, STORAGE AND MARKING OF THE CONSTRUCTION PRODUCT

4.1. Packaging

BAKS cable support structures

The elements of BAKS cable support structures should be placed in unit or collective packaging protecting them against mechanical and environmental damage, and then transport packaging, limiting the possibility of free movement and protecting them against damage during handling and transport.

The following information should appear on the packaging:

- name of the manufacturer;
- product symbol;
- Product article number;
- number of structural elements units in the package (for collective packaging).

Cables

Manufacturing sections of cables should be provided with tight ends.

Cables should be packaged in accordance with the requirements of the PN-E-79100 standard.

4.2. Transport

BAKS cable support structures

The transport of BAKS support structure elements packed in accordance with point 4.1 may be carried out by any means of transport. The components of the support structure must be protected against mechanical damage and against relative humidity higher than 95 % at +40 °C in accordance with the requirements of the applicable transport regulations.

Cables

Cables should be transported in accordance with the requirements of PN-E-79100 standard.

4.3. Storage

BAKS cable support structures

Store the components of BAKS support structures according to the following conditions:

1. Delivered state products (i.e. in original BAKS packaging) must be stored in dry and ventilated rooms,
2. During storage, protect against rapid changes in air humidity and temperature, which may cause condensation of water vapour. Failure to do so may result in white spots (zinc oxides),
3. If it is necessary to place the products in the open air for a short period of time, moisture drainage must be provided. Use a cover ensuring air circulation,
4. Should the products get wet, they must be dried (separate pieces, so that they do not come into contact with each other and placed in a dry, well-ventilated place until they are completely dry) before storage.

Cables

Cables should be packaged in accordance with the requirements of the PN-E-79100 standard.

4.4. Marking of the construction product

The marking of the construction product and its packaging, before it is placed on the market, should contain the information required in this CNBOP-PIB National Technical Assessment.

4.4.1. Marking of the construction product

Product marking should be carried out in accordance with the guidelines contained in the Regulation of the Minister of Infrastructure of 17 November 2016 on the manner of declaring the performance of construction products and the manner of marking them with the construction mark (Journal of Laws 2016, item 1966, as amended):

§ 10.

- 1) The manufacturer shall mark the construction product with the construction mark before placing it in circulation or making it available on the national market.
- 2) The construction mark shall be affixed in a visible, readable and permanent manner either directly to the construction product or to a label affixed to that product.
- 3) Where it is not possible to affix the construction mark as specified in paragraph 2, due to the size or the nature of the construction product, that mark shall be affixed to the unit or collective packaging or documents accompanying the construction product.

§ 11.1.

The marking of a construction product with a construction mark shall be accompanied by the following information:

- 1) the last two digits of the year in which the construction mark was first affixed to the construction product;
- 2) the manufacturer's name and registered office or an identification mark enabling the manufacturer's name and registered office to be clearly identified;
- 3) name and type designation of the construction product;
- 4) the number and year of issue of the National technical assessment according to which the performance was declared;
- 5) the number of the national declaration of performance;
- 6) the level or class of the declared performance;
- 7) the name of the certification body that participated in the assessment and verification of constancy of performance of the construction product;
- 8) the address of the manufacturer's website if the national declaration of performance is made available on it.

§12.

A construction product bearing a construction mark may bear other markings, signs and inscriptions, provided that they do not impair the visibility and legibility of the construction mark and of the information referred to in § 11 and that their meaning and graphic form are not misleading.

4.4.2. Marking by type, characteristics and intended use of the product

BAKS cable support structures are identified on the basis of the product catalogue. It is not possible to apply the product symbol to all components due to production technology.

4.4.3. Labelling of product packaging by type, characteristics, intended use:

The packaging of the product which is the subject of this National Technical Assessment shall contain at least the following information:

- Construction mark, conditionally in accordance with the guidelines in section 4.4.1;
- name or logo of the manufacturer;
- product code;

- product name;
- number of pieces per package.

5. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

5.1. General principles

In accordance with Article 4, Article 5(2) and Article 8(1) of the Act of 16 April 2004 on construction products (Dz. U. 2021, item 1213), a product to which this CNBOP-PIB National Technical Assessment refers may be placed on the market and used in the performance of construction works to the extent corresponding to its functional properties and intended use, if the manufacturer has assessed and verified the constancy of performance and by issuing a national declaration of performance of the construction product has declared that, under his sole responsibility, the product performance complies with the **National Technical Assessment CNBOP-PIB Nr CNBOP-PIB-KOT-2023/0371- 3703 Issue 2** and affixed the construction mark to the product.

In accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the methods of declaring the performance of construction products and the method of marking them with a construction mark (Dz. U. of 2016, item 1966, as amended), the assessment and verification of the constancy of performance **of BAKS cable systems (cable support structures with electric conductors and cables) with the circuit integrity maintenance class of E30, E60, E90 according to DIN 4102- 12 is performed by the manufacturer using system 1+ of assessment and verification of constancy of performance** meaning a certification of conformity of the product performance characteristics by an accredited certification body on the basis of:

- 1) the activities of the manufacturer, including the determination of the type of construction product and maintenance of:
 - a) factory production control system,
 - b) testing of samples collected at the factory by the manufacturer in accordance with a prescribed test plan;
- 2) the assessment and verification carried out by an accredited certification body shall include:
 - a) initial inspection of the manufacturing plant and factory production control,
 - b) issuance of a national certificate of constancy of performance,
 - c) continuous surveillance, assessment and evaluation of factory production control,
 - d) carrying out control tests on samples taken by the certification body at the manufacturing plant or in the manufacturer's storage facilities.

5.2. Factory production control (FPC)

5.2.1. General provisions

The manufacturer must establish, document and maintain a system of FPC to ensure that the products placed on the market conform to the prescribed performance.

The FPC system shall include written procedures, regular inspections and testing and/or assessment and the use of results to control raw materials and other incoming materials or components, equipment, the manufacturing process and the product.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic and orderly manner in the form of written policies and procedures. Such documentation of the production control system should ensure a common understanding of the conformity assessment and enable the required performance of the product to be achieved and should enable the effective operation of the production control system to be verified.

The factory production control simultaneously uses operating techniques and all the actions allowing to maintain and control the conformity of the product with this National Technical Assessment.

5.2.2. Requirements

The construction product subject to this National Technical Assessment should be manufactured according to the factory production control system.

The manufacturer must establish, document, implement and maintain a factory production control system in order to ensure the constancy of performance of the construction product as specified in this CNBOP-PIB National Technical Assessment.

The documentation of the factory production control shall include:

- a) organisational structure,
- b) requirements for personnel (qualifications, authorisations, responsibility for particular elements of the factory production control, training),
- c) management reviews performed by the management,
- d) supervision of documentation and records,
- e) plans for inspections and testing of raw materials, requirements,
- f) plans for inspections and testing of the finished product,
- g) supervision over the equipment used for production,
- h) supervision over equipment used for the inspections and testing with the maintenance of measurement coherence,
- i) supervision over the manufacturing process, including the conduct of inter-process tests and inspections,
- j) description of subcontracted work and the procedure for its supervision,
- k) handling of non-compliant product and complaints, implementation of corrective actions,
- l) description of product packaging, transport, storage and marking methods.

The documentation of factory production control should be supplemented with technical documentation, technical specifications (product standards, test standards, European or national technical assessments, etc.), legal regulations.

The quality management system applied by the requirements of PN-EN ISO 9001 can be considered a factory production control system if the requirements of this CNBOP-PIB National Technical Approval are also met.

5.3. Initial type testing

The initial type testing confirms the required performance of the construction product, carried out before placing it on the market and use of the product as well as whenever there is a change in the raw material or in the components or production technology, as well as changes in the FPC system, in situations where they affect the performance of the product.

On the basis of the **system 1+ of assessment and verification of constancy of performance** adopted for the product covered by this National Technical Assessment and in accordance with § 5 of the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Dz. U. of 2016, item 1968) initial type testing should be performed by:

1. Accredited testing laboratory in accordance with the Act of 13 April 2016 on conformity assessment and market supervision systems or;
2. Foreign laboratory if required by international agreements or;
3. Notified laboratory in accordance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC or;
4. Other laboratory with which the assessment unit has signed an agreement involving the acceptance of the results of tests and calculations.

The assessment unit may accept the results of tests and calculations conducted by domestic or foreign laboratories other than those listed above, as delivered by the applicant.

The scope of the initial type testing shall be all the tests prescribed in section 3.

Positive results of tests carried out in accredited laboratories which in the procedure of **CNBOP-PIB National Technical Assessment No CNBOP-PIB-KOT-2023/0371- 3703, issue 2** were the basis for determining the performance of the product, may be considered as the initial type examination in the assessment and verification of the constancy of performance of the product.

5.4. End product testing

The testing plan for end products includes ongoing tests, periodic tests and control tests.

5.4.1. Ongoing tests

Ongoing tests constitute an internal production control measure as a result of which the manufacturer ensures compliance of the technical properties of the product with the findings of the National Technical Assessment.

Testing scope according to Table 11.

Table 11

| No. | Test type | Requirements | Test method |
|-----|--|---|-------------|
| 1 | External appearance, dimensions, marking | According to the manufacturer's documentation | Check |

The results of ongoing tests should be systematically recorded and the records of the register should confirm that the products meet the criteria of conformity assessment. Each batch should be uniquely identifiable in the test record.

The manufacturer should indicate in the factory production control documentation what percentage (no less than 1 per cent) of the product samples will be used for ongoing testing. If there are different varieties (versions) of the product within a batch, then the tests must be carried out for each variety.

5.4.2. Periodic tests

The tests should be carried out in order to periodically check the quality of products and to confirm the stability of production, at least once every 3 years.

Testing scope according to Table 12.

Table 12

| No. | Test type | Requirements | Test method |
|-----|---|--|--|
| 1 | External appearance, dimensions, marking | According to the manufacturer's documentation | Check |
| 2 | Maintenance of the circuit integrity of cable systems* (ensuring continuity of power supply or signal transmission for the time required for the starting and operation of the fire protection device) | Class E30, E60, E90 according to DIN 4102-12:1998 30, 60 and 90 minutes according to Polish regulations | PN-EN 1363-1:2020-07 and DIN 4102-12:1998 |

* The test must be carried out when changes are made to the design covered by this National Technical Assessment

5.4.3. Control tests

In accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the method of declaring the performance of construction products and the method of marking them with the construction mark (Journal of Laws 2016, item 1966, as amended) and the system 1+ of assessment and verification of constancy of performance defined for the product covered by this CNBOP-PIB National Technical Assessment, control tests of the product should be carried out.

Control tests should be carried out at least once every 3 years.

Testing scope according to Table 13.

Table 13

| No. | Test type | Requirements | Test method |
|-----|--|---|-------------|
| 1 | External appearance, dimensions, marking | According to the manufacturer's documentation | Check |

5.5. Test methods

Testing of the products should be carried out in accordance with the methods specified in section 3 and 5.4 of this CNBOP- PIB National Technical Assessment. The obtained results shall be compared with the requirements set out in this point. During sample collection, sample preparation and testing, the environmental conditions specified in the normative documents listed in section 3 and 5.4 of this CNBOP-PIB National Technical Assessment should be ensured.

5.6. Collection of samples for tests

Samples for testing should be taken at random, in accordance with PN-N-03010 or any other equivalent standard.

5.7. Evaluation of test results

Manufactured products should be considered compliant with the requirements of this CNBOP-PIB National Technical Assessment if the results of all tests included in section 3 are positive. Results from previous tests carried out in accredited laboratories should also be taken into account in the evaluation

of the results if the test methods and the exposure conditions are in accordance with the requirements of this CNBOP-PIB National Technical Assessment.

6. LEGAL INSTRUCTION

- 6.1. The CNBOP-PIB National Technical Assessment **CNBOP- PIB CNBOP-PIB-KOT-2023/0371-3703 issue 2** is a document confirming the positive assessment of the performance for the intended use of the product named **BAKS cable systems (cable support structures with electric conductors and cables) with the circuit integrity maintenance class of E30, E60, E90 according to DIN 4102- 12:1998** in the scope resulting from the provisions of this CNBOP-PIB National Technical Assessment.
- 6.2. The set of performance characteristics recorded in the CNBOP-PIB National Technical Assessment and their required level constitute the basis for assessment and verification of constancy of performance by the manufacturer and for issuing, under his sole responsibility, a national declaration of performance.
- 6.3. The CNBOP-PIB National Technical Assessment **CNBOP- PIB CNBOP-PIB-KOT-2023/0371-3703 issue 2** confirms the positive assessment of the product as manufactured by the Applicant and submitted to the procedure for issuing the CNBOP-PIB National Technical Assessment. The procedure for issuing the CNBOP-PIB National Technical Assessment does not change or correct the product by assigning to it requirements other than those declared by the Manufacturer and other means of testing the performance than those which are actually used in the production process of the product in type testing and ongoing production control.
- 6.4. The CNBOP-PIB National Technical Approval is not a document authorising the marking of the construction product before market introduction.
- 6.5. The product shall be delivered to the consignee in accordance with the packaging, storage and transport conditions specified in section 4 of this CNBOP-PIB National Technical Assessment. This condition applies to the Supplier at all stages of product distribution from the manufacturer to the end user.
- 6.6. The CNBOP-PIB National Technical Assessment does not relieve the manufacturer of products from responsibility for the proper quality of each batch and single unit, and contractors of construction works from responsibility for their proper use.
- 6.7. The guarantee for the construction product, which is the subject of this CNBOP-PIB National Technical Assessment, shall be granted by the Supplier on the basis of separate regulations.
- 6.8. The content of leaflets, announcements and other documents related to the marketing and use of the product covered by this CNBOP-PIB National Technical Assessment in the construction industry should include information about the CNBOP-PIB National Technical Assessment issued for this product: **CNBOP-PIB-KOT-2023/0371-3703 issue 2**.

- 6.9.** The CNBOP-PIB National Technical Assessment does not infringe on the rights resulting from the provisions on industrial property protection, and in particular from the announcement of the Marshal of the Sejm of the Republic of Poland of 30 June 2000 – Industrial Property Law (consolidated text Dz. U. 2001, item 324). The assurance of these rights is the responsibility of the users of this CNBOP-PIB National Technical Assessment.
- 6.10.** It is the responsibility of the manufacturer to check that the solution which is the subject of the CNBOP-PIB National Technical Assessment does not infringe the rights of third parties.
- 6.11.** Liability for damage caused to anyone by a defect in the product shall be borne by the Manufacturer.
- 6.12.** In relation to the issue of this CNBOP-PIB National Technical Assessment, CNBOP-PIB shall not be held liable for any possible infringement of exclusive and acquired rights.
- 6.13.** CNBOP-PIB may make changes in the performance properties specified in this CNBOP-PIB National Technical Assessment. This shall require a written request, supported by reasons, from the manufacturer and an investigation as appropriate to the changes in scope. It is unacceptable to introduce any changes to the content of the CNBOP-PIB National Technical Assessment made in a manner other than that specified above.
- 6.14.** The CNBOP-PIB National Technical Assessment may be waived by the CNBOP-PIB in case of changes in separate regulations, standards and regulations established by international organisations, if it results from the concluded contracts, significant changes in the scientific basis and the state of practical knowledge and if the positive assessment of the performance properties of the construction product used for its intended purpose is not confirmed in the course of its application. The CNBOP-PIB National Technical Assessment may be repealed on the CNBOP-PIB's own initiative or at the request of the Chief Inspector of Construction Supervision, after an investigation with the participation of the applicant.

7. LIST OF DOCUMENTS USED IN THE PROCEEDINGS

Related documents and standards

PN-EN 1363-1:2012

Fire resistance tests - Part 1: General requirements

PN-EN 1363-1:2020-07

Fire resistance tests - Part 1: General requirements

DIN 4102-2:1997

Fire performance of construction materials and components - Part 2: Construction components, definitions, requirements and tests

DIN 4102-4:2016

Fire performance of construction materials and components - Part 4: Listing and use of classified construction materials, construction components and special construction components

DIN 4102-12:1998

Fire performance of construction materials and components - Part 12: Maintenance of the circuit integrity of cable systems - Requirements and tests

PN-EN 50582:2016-12

Procedure for assessing the continuity of a circuit in a fibre optic cable during a fire resistance test of the cable

PN-E-79100:2001

Electric cables and conductors - Packaging, storage and transportation

PN-N-03010:1983

Statistical quality control - Random selection of product units for sampling

Reports, test reports, assessments, classifications used in the procedure for issuing the National Technical Assessment

Test reports:

1. No. FIRES-FR-054-06-AUNE of 23/06/2006
2. No. FIRES-FR-109-06-AUNE of 09/10/2006
3. No. FIRES-FR-160-06-AUNE of 08/12/2006
4. No. FIRES-FR-040-07-AUNE of 19/03/2007
5. No. FIRES-FR-086-07-AUNE of 19/06/2007
6. No. FIRES-FR-102-07-AUNE of 12/07/2007
7. No. FIRES-FR-129-07-AUNE of 03/08/2007
8. No. FIRES-FR-162-07-AUNE of 20/09/2007
9. No. FIRES-FR-202-07-AUNE of 22/11/2007
10. No. FIRES-FR-234-07-AUNE of 07/01/2008
11. No. FIRES-FR-235-07-AUNE of 14/01/2008
12. No. FIRES-FR-012-08-AUNE of 07/02/2008
13. No. FIRES-FR-061-08-AUNE of 27/05/2008
14. No. FIRES-FR-063-08-AUNE of 27/05/2008
15. No. FIRES-FR-151-08-AUNE of 27/08/2008
16. No. FIRES-FR-198-08-AUNE of 29/10/2008
17. No. FIRES-FR-257-08-AUNS of 17/12/2008
18. No. FIRES-FR-256-08-AUNE of 19/12/2008
19. No. FIRES-FR-004-09-AUNE of 25/02/2009
20. No. FIRES-FR-057-09-AUNE of 09/06/2009
21. No. FIRES-FR-094-09-AUNE of 17/07/2009
22. No. FIRES-FR-201-09-AUNE of 20/01/2010
23. No. FIRES-FR-090-10-AUNE of 23/06/2010
24. No. FIRES-FR-121-10-AUNE of 30/07/2010
25. No. FIRES-FR-171-10-AUNE of 22/10/2010
26. No. FIRES-FR-044-11-AUNE of 20/05/2011
27. No. FIRES-FR-086-11-AUNE of 21/05/2011
28. No. FIRES-FR-126-11-AUNE of 27/06/2011
29. No. FIRES-FR-196-11-AUNE of 26/10/2011
30. No. FIRES-FR-266-11-AUNE of 23/02/2012
31. No. FIRES-FR-020-12-AUNE of 29/02/2012
32. No. FIRES-FR-102-12-AUNE of 18/05/2012
33. No. FIRES-FR-135-12-AUNE of 21/07/2012
34. No. FIRES-FR-217-12-AUNE of 27/09/2012
35. No. FIRES-FR-245-12-AUNE of 14/12/2012
36. No. FIRES-FR-005-13-AUNE of 24/01/2013
37. No. FIRES-FR-030-13-AUNE of 28/02/2013
38. No. FIRES-FR-060-13-AUNE of 19/04/2013
39. No. FIRES-FR-079-13-AUNE of 06/06/2013
40. No. FIRES-FR-108-13-AUNE of 12/07/2013
41. No. FIRES-FR-160-13-AUNE of 26/09/2013
42. No. FIRES-FR-183-13-AUNE of 25/10/2013
43. No. FIRES-FR-204-13-AUNE of 19/11/2013
44. No. FIRES-FR-224-13-AUNE of 02/12/2013
45. No. FIRES-FR-016-14-AUNE of 30/01/2014

46. No. FIRES-FR-049-14-AUNE of 04/04/2014
47. No. FIRES-FR-066-14-AUNE of 23/05/2014
48. No. FIRES-FR-098-14-AUNE of 27/05/2014
49. No. FIRES-FR-129-14-AUNE of 17/07/2014
50. No. FIRES-FR-143-14-AUNE of 22/08/2014
51. No. FIRES-FR-156-14-AUNE of 28/08/2014
52. No. FIRES-FR-174-14-AUNE of 21/11/2014
53. No. FIRES-FR-243-14-AUNE of 26/01/2015
54. No. FIRES-FR-225-14-AUNE of 22/12/2014
55. No. FIRES-FR-010-15-AUNE of 06/03/2015
56. No. FIRES-FR-015-15-AUNE of 09/03/2015
57. No. FIRES-FR-031-15-AUNE of 07/04/2015
58. No. FIRES-FR-035-15-AUNE of 10/04/2015
59. No. FIRES-FR-062-15-AUNE of 26/05/2015
60. No. FIRES-FR-112-15-AUNE of 01/07/2015
61. No. FIRES-FR-150-15-AUNE of 08/09/2015
62. No. FIRES-FR-202-15-AUNE of 12/01/2016
63. No. FIRES-FR-018-16-AUNE of 26/04/2016
64. No. FIRES-FR-029-16-AUNE of 29/04/2016
65. No. FIRES-FR-077-16-AUNE of 30/05/2016
66. No. FIRES-FR-135-16-AUNE of 16/08/2016
67. No. FIRES-FR-200-16-AUNE of 12/12/2016
68. No. FIRES-FR-239-16-AUNE of 09/12/2016
69. No. FIRES-FR-285-16-AUNE of 02/03/2017
70. No. FIRES-FR-015-17-AUNE of 29/03/2017
71. No. FIRES-FR-037-17-AUNE of 25/04/2017
72. No. FIRES-FR-100-17-AUNE of 02/06/2017
73. No. FIRES-FR-131-17-AUNE of 27/11/2017
74. No. FIRES-FR-153-17-AUNE of 31/08/2017
75. No. FIRES-FR-189-17-AUNE of 16/11/2017
76. No. FIRES-FR-206-17-AUNE of 14/12/2017
77. No. FIRES-FR-241-17-AUNE of 25/01/2018
78. No. FIRES-FR-224-17-AUNS3 of 30/01/2018
79. No. FIRES-FR-044-18-AUNS3 of 13/04/2018
80. No. FIRES-FR-062-18-AUNE3 of 06/04/2018
81. No. FIRES-FR-068-18-AUNE of 14/05/2018
82. No. FIRES-FR-114-18-AUNE2 of 13/07/2018
83. No. FIRES-FR-139-18-AUNE3 of 18/07/2018
84. No. FIRES-FR-175-18-AUNE2 of 07/09/2018
85. No. FIRES-FR-238-18-AUNE2 of 06/12/2018
86. No. FIRES-FR-244-18-AUNE2 of 10/12/2018
87. No. FIRES-FR-257-18-AUNE2 of 17/01/2019
88. No. FIRES-FR-029-19-AUNE2 of 25/02/2019
89. No. FIRES-FR-021-19-AUNE2 of 15/03/2019
90. No. FIRES-FR-059-19-AUNE2 of 09/04/2019
91. No. FIRES-FR-122-19-AUNE2 of 03/07/2019
92. No. FIRES-FR-136-19-AUNE3 of 26/07/2019
93. No. FIRES-FR-032-20-AUNE2 of 10/03/2020
94. No. FIRES-FR-164-20-AUNE2 of 05/11/2020
95. No. FIRES-FR-174-20-AUNE2 of 18/11/2020
96. No. FIRES-FR-247-20-AUNE2 of 08/03/2021
97. No. FIRES-FR-034-21-AUNE2 of 14/04/2021
98. No. FIRES-FR-067-21-AUNE2 of 28/04/2021
99. No. FIRES-FR-167-21-AUNE3 of 22/07/2021
100. No. FIRES-FR-189-21-AUNE2 of 21/09/2021
101. No. FIRES-FR-229-21-AUNE2 of 15/10/2021
102. No. FIRES-FR-318-21-AUNE2 of 14/01/2022
103. No. FIRES-FR-029-22-AUNE2 of 14/03/2022
104. No. FIRES-FR-103-22-AUNE2 of 27/05/2022

105. No. FIRES-FR-158-22-AUNE2 of 13/07/2022
106. No. FIRES-FR-180-22-AUNE2 of 08/08/2022
107. No. FIRES-FR-197-22-AUNE4 of 14/09/2022
108. No. FIRES-FR-210-22-AUNE2 of 12/08/2022
from Fires, s.r.o. Osloboditel'ov 282, 059 35 Batizovce, Slovakia.

Test reports:

109. No. 31/13 of 28/07/2004
110. No. 31/15 of 31/08/2005
111. No. 31/20 of 21/04/2006
112. No. 31/22 of 31/07/2006
113. No. 31/24 of 30/11/2006
114. No. 31/25 of 30/11/2006
115. No. 31/27 of 30/11/2006
116. No. 31/29 of 31/01/2007
117. No. 31/30 of 31/01/2007
118. No. 31/34 of 22/08/2007
119. No. 31/43 of 30/10/2009
120. No. 31/44 of 30/10/2009
121. No. 31/45 of 30/04/2010
122. No. 31/46 of 30/04/2010
123. No. 31/47 of 30/04/2010
124. No. 31/48 of 30/04/2010
125. No. DMT-DO 31/49 of 30/06/2010
126. No. DMT-DO 31/50 of 25/10/2010
127. No. DMT-DO 31/51 of 09/12/2010
128. No. DMT-DO 31/52 of 20/12/2010
129. No. DMT-DO 31/55 of 31/01/2013
130. No. DO 31-58 of 07/08/2013
131. No. DO 31-53 of 19/12/2013
132. No. DO 31-57 of 19/12/2013
133. No. DO 31-60 of 15/01/2014
134. No. DMT-31-59 of 25/04/2014
135. No. DO 31-61 of 20/05/2014
136. No. P-1015 DMT DO of 20/05/2014
137. No. DO 31-70 of 04/08/2014
138. No. P-1022 DMT DO of 16/05/2022
139. No. P-1035 DMT DO of 28/12/2020
140. No. DO 31-143 of 10/10/2019
141. No. DO 31-161 of 25/01/2021
from DMT GmbH - Fachstelle Für Brandschutz in Tremoniastrasse 13, 44137 Dortmund, Germany.

Test reports:

142. No. 232000094-1 of 03/09/2019
143. No. 232000094-2 of 03/09/2019
144. No. 232000185-01 of 04/11/2019
145. No. 232000211-01 of 04/12/2019
146. No. 232000289-1 of 05/01/2020
147. No. 232000370-01 of 18/06/2020
148. No. 232000373-01 of 31/07/2020
149. No. 232000373 02 of 03/11/2020
150. No. 232000373 03 of 08/06/2021
151. No. 232000373 04 of 29/06/2021
152. No. 232000589 01 of 20/05/2021
153. No. 232000629-01 of 27/08/2021
from MPA NRW, Auf den Thranen 2, 59597 Erwitte, Germany

Test reports:

- 154. No. MPA 2401/111/19 of 22/02/2020
 - 155. No. MPA 2401/335/20 of 16/07/2021
 - 156. No. MPA 2401/336/20 of 27/04/2021
 - 157. No. MPA 2401/406/21 of 26/08/2021
 - 158. No. MPA 2401/534/21 of 28/04/2022
 - 159. No. MPA 2401/486/21 of 30/08/2021
 - 160. No. MPA 2401/574/22 of 10/05/2022
 - 161. No. MPA 3200/090/14 of 15/12/2017
 - 162. No. MPA 3732/632/14 of 20/12/2017
 - 163. No. MPA 3593/674/14 of 18/07/2014
 - 164. No. MPA 2400/062/15 of 20/12/2017
 - 165. No. MPA 2401/117/16 of 15/02/2018
 - 166. No. MPA 2401/183/16 of 15/02/2018
- from MPA Braunschweig, Beethovenstrasse 52, D-38103 Braunschweig

Test reports:

- 167. No. RFTR19061 of 05/04/2019
 - 168. No. RFTR19062 of 05/04/2019
 - 169. No. RFTR19083 of 05/04/2019
 - 170. No. RFTR19084 of 05/04/2019
- from EFECTIS, Dilovasi OSB 5, Kisim Firat Cad. 1 18 41455

Test report:

- 171. No. LP-1369/06 of 18/12/2007
- from ITB Zakład Badań Ogniwych, ul. Ksawerów 21, 02-656 Warsaw.

Test reports (for fibre optics):

- 172. No. 12400010-2 of 05/03/2020 r. from Instytut Łączności-PIB, Laboratorium Badań Urządzeń Telekomunikacyjnych (LBUT), Zespół Badań Urządzeń Telewizyjnych, Kabli i Osprzętu (LB-4), ul. Szachowa 1, 04-894 Warsaw,
- 173. No. 901/BW/21 of 10/03/2021 from CNBOP-PIB ul. Nadwiślańska 213, 05-420 Józefów,
- 174. No. 1614/BW/21 of 10/01/2022 from CNBOP-PIB ul. Nadwiślańska 213, 05-420 Józefów,
- 175. No. FOC 2-09/2020 of 24/09/2020 from Technokabel S.A. ul. Nasielska 55, 04-343 Warsaw,

Classifications:

- 176. No. FIRES-JR-119-17-NURE of 19/12/2017
- 177. No. FIRES-JR-145-17-NURE of 12/01/2018
- 178. No. FIRES-JR-161-17-NURE of 05/03/2018
- 179. No. FIRES-JR-148-17-NURE of 15/05/2018
- 180. No. FIRES-JR-068-18-NURE of 12/04/2018
- 181. No. FIRES-JR-074-18-NURE3 of 07/06/2018
- 182. No. FIRES-JR-088-18-NURE2 of 07/08/2018
- 183. No. FIRES-JR-098-18-NURE2 of 02/08/2018
- 184. No. FIRES-JR-025-18-NURE2 of 07/03/2018
- 185. No. FIRES-JR-028-18-NURE2 of 07/03/2018
- 186. No. FIRES-JR-034-18-NURE2 of 07/03/2018
- 187. No. FIRES-JR-031-18-NURE2 of 07/03/2018
- 188. No. FIRES-JR-037-18-NURE2 of 07/03/2018
- 189. No. FIRES-JR-040-18-NURE2 of 07/03/2018
- 190. No. FIRES-JR-043-18-NURE2 of 07/03/2018
- 191. No. FIRES-JR-046-18-NURE2 of 07/03/2018
- 192. No. FIRES-JR-049-18-NURE2 of 07/03/2018
- 193. No. FIRES-JR-052-18-NURE2 of 07/03/2018
- 194. No. FIRES-JR-055-18-NURE2 of 07/03/2018
- 195. No. FIRES-JR-058-18-NURE2 of 07/03/2018
- 196. No. FIRES-JR-119-18-NURE2 of 09/10/2018
- 197. No. FIRES-JR-142-18-NURE2 of 04/02/2019

198. No. FIRES-JR-153-18-NURE2 of 06/02/2019
 199. No. FIRES-JR-164-18-NURE2 of 07/02/2019
 200. No. FIRES-JR-038-19-NURE2 of 28/03/2019
 201. No. FIRES-JR-045-19-NURE3 of 08/04/2019
 202. No. FIRES-JR-052-19-NURE3 of 16/04/2019
 203. No. FIRES-JR-093-19-NURE2 of 16/07/2019
 204. No. FIRES-JR-107-19-NURE3 of 05/08/2019
 205. No. FIRES-JR-162-19-NURE2 of 02/10/2019
 206. No. FIRES-JR-165-19-NURE2 of 02/10/2019
 207. No. FIRES-JR-168-19-NURE2 of 02/10/2019
 208. No. FIRES-JR-171-19-NURE2 of 02/10/2019
 209. No. FIRES-JR-023-20-NURE of 15/06/2020
 210. No. FIRES-JR-063-20-NURE2 of 23/07/2020
 211. No. FIRES-JR-069-20-NURE2 of 03/08/2020
 212. No. FIRES-JR-082-20-NURE2 of 31/08/2020
 213. No. FIRES-JR-085-20-NURE2 of 31/08/2020
 214. No. FIRES-JR-088-20-NURE2 of 31/08/2020
 215. No. FIRES-JR-091-20-NURE2 of 31/08/2020
 216. No. FIRES-JR-094-20-NURE2 of 31/08/2020
 217. No. FIRES-JR-097-20-NURE2 of 31/08/2020
 218. No. FIRES-JR-098-20-NURE2 of 31/08/2020
 219. No. FIRES-JR-101-20-NURE2 of 31/08/2020
 220. No. FIRES-JR-104-20-NURE2 of 31/08/2020
 221. No. FIRES-JR-107-20-NURE2 of 31/08/2020
 222. No. FIRES-JR-110-20-NURE2 of 31/08/2020
 223. No. FIRES-JR-113-20-NURE2 of 31/08/2020
 224. No. FIRES-JR-116-20-NURE2 of 31/08/2020
 225. No. FIRES-JR-119-20-NURE2 of 31/08/2020
 226. No. FIRES-JR-122-20-NURE2 of 31/08/2020
 227. No. FIRES-JR-125-20-NURE2 of 31/08/2020
 228. No. FIRES-JR-147-20-NURE2 of 30/11/2020
 229. No. FIRES-JR-031-21-NURE of 04/03/2021
 230. No. FIRES-JR-096-21-NURE2 of 01/12/2021
 231. No. FIRES-JR-045-21-NURE of 04/03/2021
 232. No. FIRES-JR-048-21-NURE of 08/06/2021
 233. No. FIRES-JR-093-21-NURE of 30/11/2021
 234. No. FIRES-JR-096-21-NURE of 01/12/2021
 235. No. FIRES-JR-039-22-NURE of 08/03/2022
 236. No. FIRES-JR-092-22-NURE of 14/06/2022
 237. No. FIRES-JR-095-22-NURE of 14/06/2022
 238. No. FIRES-JR-123-22-NURE of 27/09/2022
 239. No. FIRES-JR-126-22-NURE2 of 30/09/2022
 240. No. FIRES-JR-138-22-NURE4 of 25/10/2022
 241. No. FIRES-JR-129-22-NURE2 of 26/10/2022
 from Fires, s.r.o. Osloboditel'ov 282, 059 35 Batizovce, Slovakia.

Expert opinion

242. No. 2400/738/18-4 of 11/07/2022
 243. No. 2400/792/18 of 25/10/2018
 issued by MPA Braunschweig, Beethovenstrasse 52, D-38103 Braunschweig
 244. Hu-001-23 of 10/01/2023
 issued by Fires, s.r.o. Osloboditel'ov 282, 059 35 Batizovce, Slovakia.

Documentation

| No. | Document name | Document no. | Date |
|-----|---------------|--------------|------|
|-----|---------------|--------------|------|

| | | | |
|----|---|-------------------|------------|
| 1. | Application for issuing a National Technical Assessment together with annexes | 0083/DOT/KOT/2022 | 07/11/2022 |
| 2. | Application for issuing a National Technical Assessment together with annexes | 0019/DOT/KOT/2023 | 31/01/2023 |

ANNEXES

Annex 1 Standard support structures



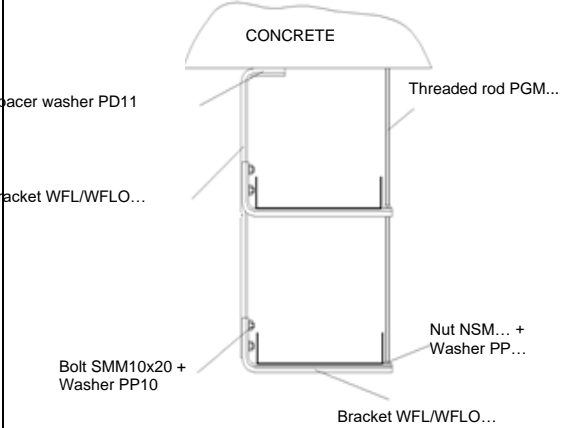
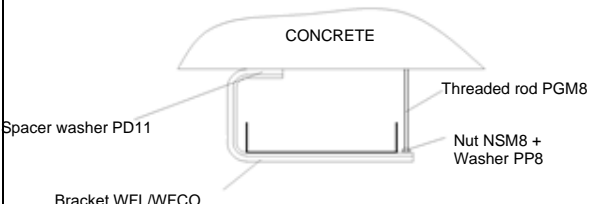
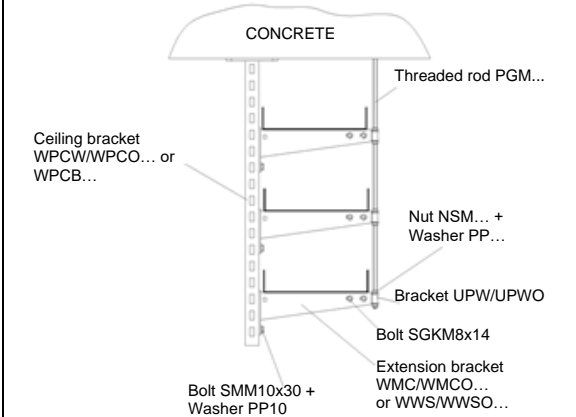
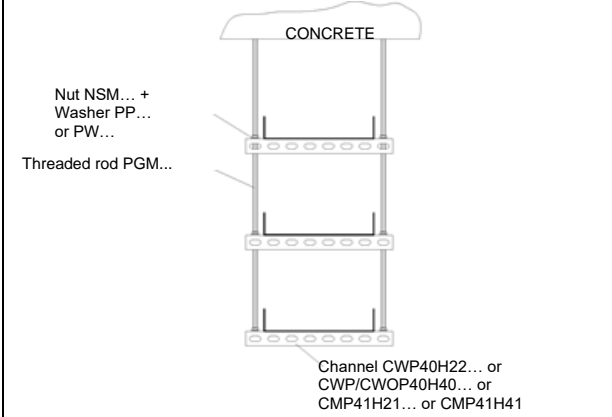
Annex 2 Special support structures

Annex 3 Special support structures - 120 min, fibre optic cables

Annex 4 Connection of cable trays and racks, channels and wire mesh trays

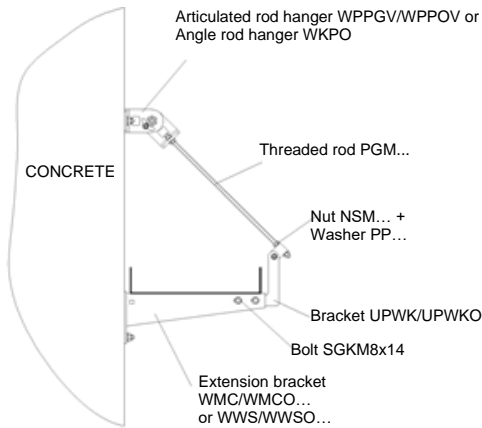
Annex 1

Standard support structures

| | |
|---|--|
| <p>KCP/KCOP...H60 (KCP...H60) Cable tray - sheet thickness 1.5 mm - max. width 300 mm - horizontal mounting - load capacity 10 kg/m</p> <p style="font-size: 48px; text-align: center;">A1</p>  | <p>DGOP...H60 Cable rack - sheet thickness 1.5 mm - max. width 400 mm - vertical and horizontal mounting - load capacity 20 kg/m</p> <p style="font-size: 48px; text-align: center;">A2</p>  |
| <p>Support spacing max. 1.2 m Ceiling structures</p> | |
| <p>1</p>  <p>Spacer washer PD11 Bracket WFL/WFLO... Threaded rod PGM... Bolt SMM10x20 + Washer PP10 Nut NSM... + Washer PP... Bracket WFL/WFLO...</p> <ul style="list-style-type: none"> - maximum two route levels - maximum load capacity of the structure 48 kg - max. load per extension bracket 24 kg - maximum extension bracket length 400 mm. | <p>2</p>  <p>Spacer washer PD11 Bracket WFL/WFCO... Threaded rod PGM8 Nut NSM8 + Washer PP8</p> <ul style="list-style-type: none"> - maximum one route level - maximum load capacity of the structure 24 kg - maximum length of bracket/extension bracket 400 mm |
| <p>3</p>  <p>Ceiling bracket WPCW/WPCO... or WPCB... Threaded rod PGM... Nut NSM... + Washer PP... Bracket UPW/UPWO Bolt SGKM8x14 Extension bracket WMC/WMCO... or WWS/WWSO... Bolt SMM10x30 + Washer PP10</p> <ul style="list-style-type: none"> - maximum three route levels - maximum load capacity of the structure 72 kg - max. load per extension bracket 24 kg - maximum extension bracket length 400 mm | <p>4</p>  <p>Nut NSM... + Washer PP... or PW... Threaded rod PGM... Channel CWP40H22... or CWP/CWOP40H40... or CMP41H21... or CMP41H41</p> <ul style="list-style-type: none"> - maximum three route levels - maximum load capacity of the structure 72 kg - maximum load capacity per level 24 kg - maximum channel length 500 mm |

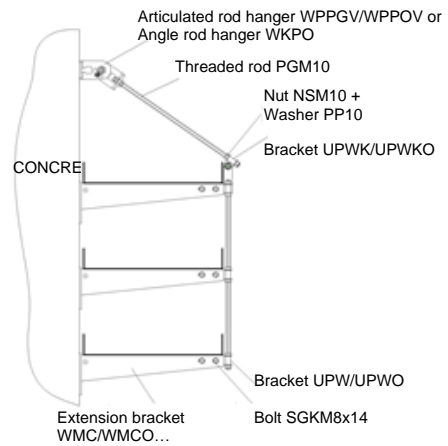
**Support spacing max. 1.2 m
Wall structures**

5



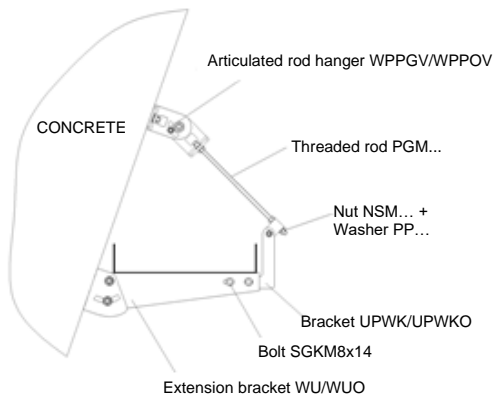
- maximum load capacity of the structure 24 kg
- maximum extension bracket length 400 mm

6



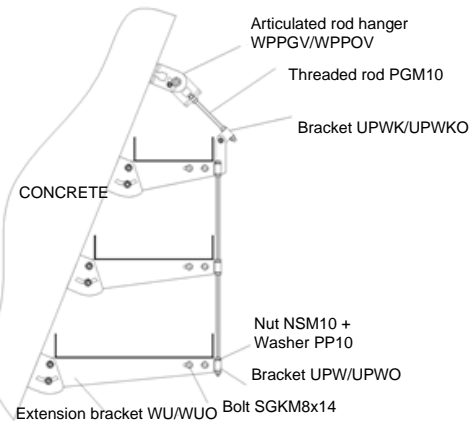
- maximum three route levels
- maximum load capacity of the structure 72 kg
- max. load per extension bracket 24 kg
- maximum extension bracket length 400 mm

7



- maximum load capacity of the structure 24 kg
- maximum extension bracket length 400 mm

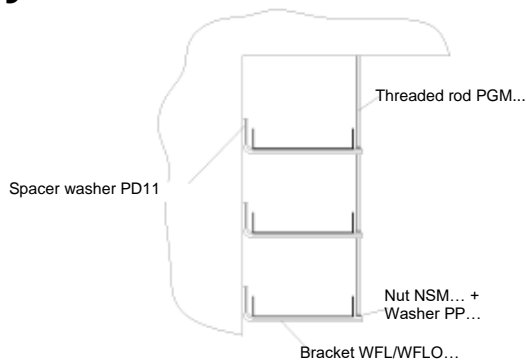
8



- maximum three route levels
- maximum load capacity of the structure 72 kg
- max. load per extension bracket 24 kg
- maximum extension bracket length 400 mm

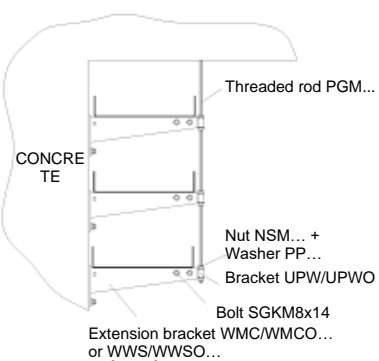
**Support spacing max. 1.2 m
Wall and ceiling structures**

9



- maximum three route levels
- maximum load capacity of the structure 60 kg
- maximum load per bracket/extension bracket 24 kg
- maximum length of bracket/extension bracket 400 mm

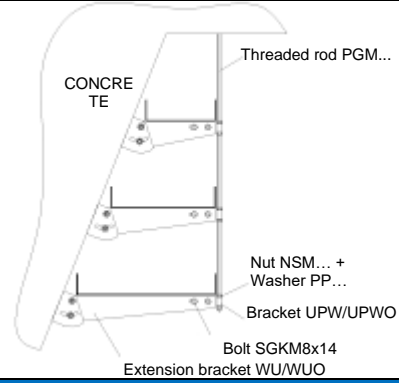
10



- maximum three route levels
- maximum load capacity of the structure 72 kg
- maximum load per bracket/extension bracket 24 kg
- maximum length of bracket/extension bracket 400 mm

11

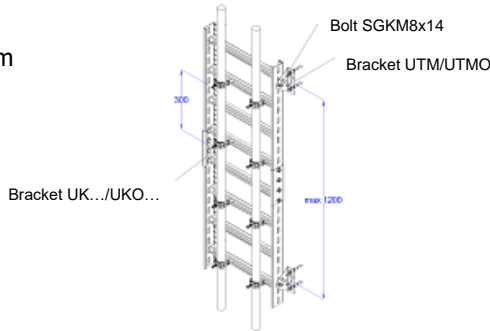
- maximum three route levels
- maximum load capacity of the structure 72 kg
- maximum load per bracket/extension bracket 24 kg
- maximum length of bracket/extension bracket 400 mm



**Support spacing max. 1.2 m
Vertical structures**

12

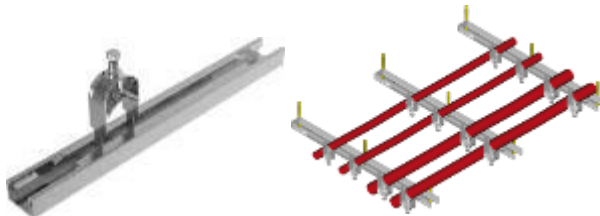
- applies only to cable racks
- attach cables max every 300 mm



SD/SDO... (SD) + UK/UKO... (UK)

- Rung + bracket
- rung spacing max. 300 mm
 - cable/conductor routing vertical and horizontal
 - cable/conductor routing on walls and ceilings

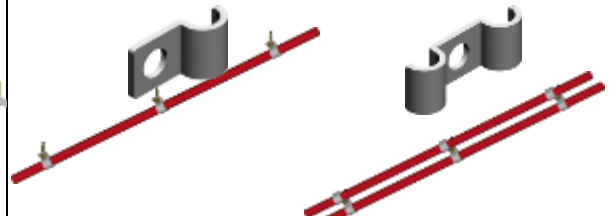
B1



UDF..., UEF...

- Cable clip
- bracket spacing max. 300 mm
 - cable/conductor routing vertical and horizontal
 - cable/conductor routing on walls and ceilings

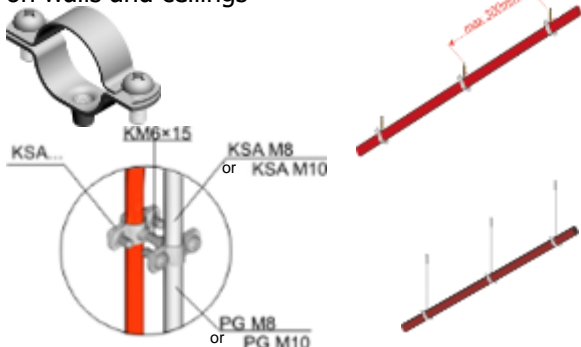
B2



KSA...

- Cable clamp
- clamps spacing max. 300 mm
 - cable/conductor routing vertical and horizontal
 - cable/conductor routing on walls and ceilings

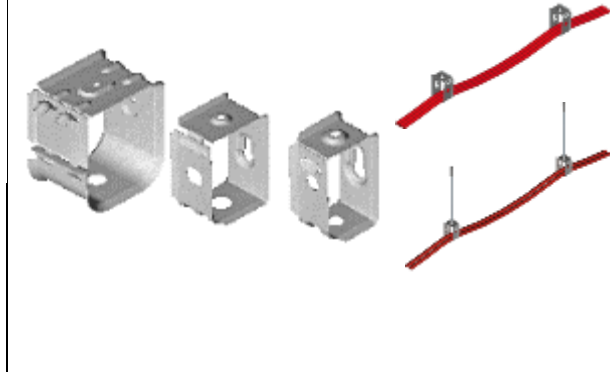
B3



OZ/OZO(OZ), OZS/OZSO(OZS), OZM/OZMO(OZM)

- Cable clamp
- clamps spacing max. 300 mm
 - cable/conductor routing, horizontal
 - cable/conductor routing on walls and ceilings

B4



CLASSIFICATION OF CABLE ASSEMBLIES ON STANDARD CABLE SUPPORTING STRUCTURES

Annex 1 Table 1. **Group A1, A2, B1, B2, B3, B4** cable classification- Standard support structures.

| | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
|-------------|---------------------------|-----|-----|-----|-----|-----|-----|
| | | | | | | | |
| BITNER | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E60 | E90 | E90 | |
| | NHXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH E90 | E90 | E90 | E60 | E90 | | |
| | BiTflame S-M(St) E90 | | | | | E90 | |
| | BiTflame AS E90 | | | | | E30 | |
| | HDGs E90 | E90 | E90 | E90 | E90 | | E90 |
| | HDGsekwf E90 | E90 | E30 | E90 | E90 | | E30 |
| | HTKSH E90 | E90 | E90 | E90 | E90 | | E90 |
| | HTKSHekw E90 | E90 | E90 | E90 | E90 | | E90 |
| | PGI-H E90 | E90 | E60 | | E90 | | |
| DÄTWYLER | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | (N)HXH | E90 | E90 | E60 | E60 | E30 | E90 |
| | (N)HXCH | E90 | | E60 | | E90 | E90 |
| | JE-H(St)H | E90 | E60 | E30 | | E30 | |
| | JE-H(St)HRH | E30 | E90 | | | | |
| ELKOND | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH = NHXH-J | E90 | E90 | E90 | E90 | | |
| | N2XH P30 | E90 | E90 | | E60 | | |
| | N2XH P60 | E90 | E90 | E60 | | | |
| | JE-H(st)H | E90 | E90 | E30 | E90 | | |
| | 1-CXKH-V | E90 | E90 | | E90 | | E90 |
| | SSKFH-V180 P60 | E90 | E90 | E60 | E30 | | |
| | SHKFH-V180 P90 | E90 | E90 | E90 | E90 | | |
| SHXKFH-V180 | E90 | E90 | | E90 | | E90 | |
| ELPAR | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH = NHXH-J | E90 | E30 | E90 | E90 | | |
| | (N)HXH = (N)HXH-J | E90 | E90 | E90 | E90 | | |
| | NHXCH | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E60 | E90 | E90 | E90 | | |
| | HDGs | E90 | E90 | E90 | E90 | | |
| | HTKSH | E90 | E30 | E90 | E90 | | |
| EUPEN | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | (N)HXH = (N)HXH-J | E90 | E90 | E90 | | E90 | |
| | (N)HXH = (N)HXH-J | E90 | E90 | E90 | | E90 | |
| | JE-H(st)H | E90 | E90 | E90 | | E90 | |
| EL | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |

| | | | | | | | |
|-------------------|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | (N)HXH = (N)HXH-J | | E90 | | | | |
| | (N)HXH = (N)HXH-J | | E90 | | | | |
| | JE-H(st)H | | E90 | | | | |
| KABLOTEK | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH = NHXH-J | E90 | E90 | E90 | | E90 | |
| | NHXCH | E90 | E90 | E90 | | E90 | |
| | JE-H(St)H | E90 | E90 | E90 | | E90 | |
| | LINCH | | E90 | | | | |
| MADEX | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH - NHXH-J | E90 | E60 | E60 | E90 | E60 | |
| | NHXCH | E90 | E90 | E90 | E90 | E90 | |
| | HTKSH | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw | E30 | E90 | E60 | E90 | E90 | |
| NKT | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH = NHXH-J | E90 | E90 | E90 | E90 | E90 | E90 |
| PRAKAB | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | PRAFlaDur 1-CCXKH-V180 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXH = NHXH-J | | | | E90 | | |
| STUDER | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | (N)HXH = (N)HXH-J | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | E90 | E90 | E90 | | E90 |
| | (N)HXCH E30 | E30 | | | | | E60 |
| | JE-H(St)H | E90 | E60 | E90 | E90 | | E90 |
| | JE-H(St)HRH | E90 | E30 | E90 | E90 | | E90 |
| TECHNOKABEL | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | E90 | E90 | E90 | | | E90 |
| | (N)HXCH E90 | E90 | E90 | E90 | | | |
| | (N)HXCH-J SERVO E90 | E90 | | | E90 | E90 | E90 |
| | NHXHRHX E90 = NHXHRHX-J E90 | | | | E90 | | |
| | JE-H(St)H E30 - E90 | E90 | E90 | E90 | E90 | | E90 |
| | HDGs E30-E90 | E90 | E90 | | E90 | | E90 |
| | HDGszo E30-E90 | E90 | E90 | E90 | E90 | | |
| | HDGszo-W E30-E90 | E90 | | | E90 | | E90 |
| | HDGsekw E30-E90 | | E30 | | | | |
| | HDGsekwzo E30-E90 | E30 | | E90 | E90 | | |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSHekw E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| HLGs E30-E90 | E90 | E90 | E90 | E90 | | | |
| HLGszo E30-E90 | E90 | E30 | | | | | |
| HLGsekw E30-E90 | E30 | E30 | E90 | | | E90 | |
| Cable type | A1 | A2 | B1 | B2 | B3 | B4 | |

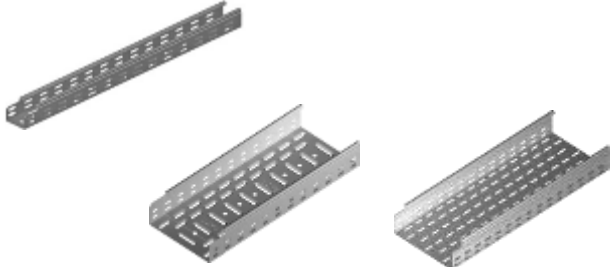



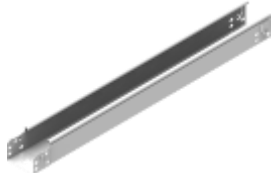

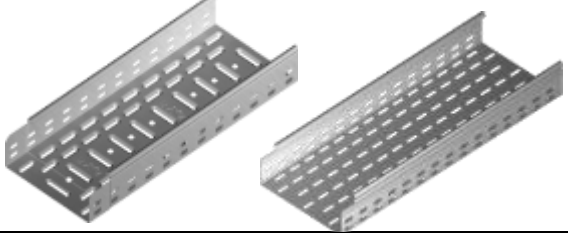
| | | | | | | | |
|-----|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E90 | E90 | E90 | E90 | | |
| | FLAME-X 950 NHXCH E90 | E90 | E90 | E90 | E90 | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E60 | E90 | | E90 | E90 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E60 | | E90 | E90 | E90 |
| | N2XH | E90 | E90 | | | | |
| | JE-H(St)H | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HDGs E30-E90 | E90 | E90 | | E90 | E90 | |
| | FLAME-X 950 HTKSH E90 | E90 | E90 | | E90 | | E60 |
| | HLGsekw | | | | | | E30 |
| VLG | Cable type | A1 | A2 | B1 | B2 | B3 | B4 |
| | (N)HXH E90 | E90 | E90 | E90 | E90 | E90 | |
| | (N)HXH E30 | E90 | E60 | E90 | E60 | E90 | |
| | JE-H(St)H E90 | E90 | E60 | E90 | E90 | E90 | |
| | JE-H(St)H E30 | E90 | E60 | E90 | E90 | E90 | |



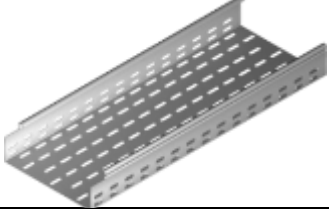
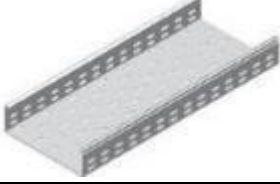
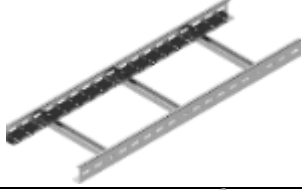
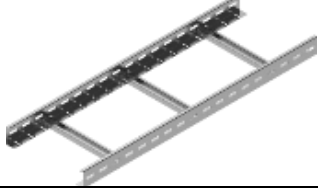
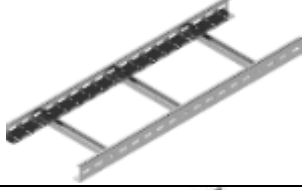


On the basis of DIN 4102-12:1998, it is possible to transfer the results of the maintenance tests for electric cables or conductors laid on standard support structures in accordance with DIN 4102- 12:1998 to standard cable support structures of other manufacturers.





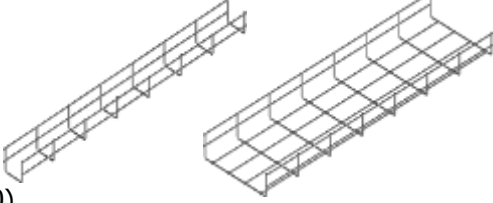
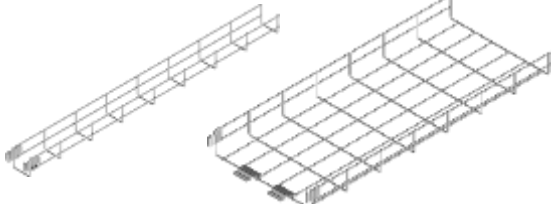
The classifications of the cable systems according to DIN 4102- 12:1998, depending on the standard cable supporting structure and the cable used, are described in the CNBOP-PIB National Technical Assessments for the cable systems.

Annex 2

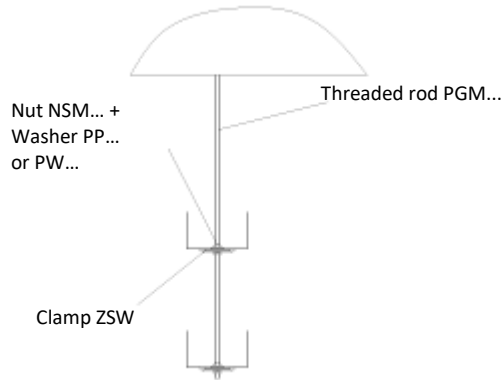
Special support structures

| | | |
|--|--|-------------|
| <p>KGL/KGOL...H60(KGL...H60) KCL/KCOL...H60(KCL...H60) KGL/KCL50H60 Cable tray - sheet thickness 0.7 mm - width 50 - 300 mm - horizontal mounting - load capacity 20 kg/m (5 kg for KGL/KCL50H60)</p> |  | <h1>K1</h1> |
| <p>KGL100H42 KCL100H42 Cable tray - sheet thickness 0.7 mm - width 100 mm - horizontal mounting - load capacity 2 kg/m</p> |  | <h1>K2</h1> |
| <p>CWP/CWOP40H40 Perforated section - channel sheet thickness 1.5 mm - horizontal mounting - load capacity 5 kg/m</p> |  | <h1>K3</h1> |
| <p>KFL...H60 Cable tray - sheet thickness 0.7 mm - width 50 - 300 mm - horizontal mounting - load capacity 20 kg/m (5 kg for KFL50H60)</p> |  | <h1>K4</h1> |
| <p>KLFL75H60 Cable tray - sheet thickness 0.7 mm - width 75 mm - horizontal mounting - load capacity 2 kg/m</p> |  | <h1>K5</h1> |
| <p>KBL...H60 Cable tray - sheet thickness 0.7 mm - width 50 - 300 mm - horizontal mounting - load capacity 20 kg/m (5 kg/m for KBL50H60)</p> |  | <h1>K6</h1> |
| <p>KGJ/KGOJ...H60(KGJ...H60) KCJ/KCOJ...H60(KCJ...H60) Cable tray - sheet thickness 1 mm - width 100 - 400 mm - horizontal mounting - load capacity 20 kg/m</p> |  | <h1>K7</h1> |

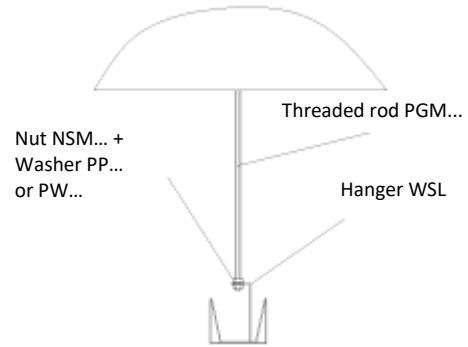
| | | |
|--|--|-------------------|
| <p>KFJ...H60 Cable tray - sheet thickness 1 mm - width 100 - 400 mm - horizontal mounting - load capacity 20 kg/m</p> |  | <p>K8</p> |
| <p>KBJ...H60 Cable tray - sheet thickness 1 mm - width 100 - 400 mm - horizontal mounting - load capacity 20 kg/m</p> |  | <p>K9</p> |
| <p>KCD/KCOD...H60(KCD...H60) Cable tray - sheet thickness 1.2 mm - width 100 - 400 mm - horizontal mounting - load capacity 10 kg/m</p> |  | <p>K10</p> |
| <p>KCP/KCOP...H60(KCP...H60) Cable tray - sheet thickness 1.5 mm - width 100 - 600 mm - horizontal mounting - load capacity 25 kg/m</p> |  | <p>K11</p> |
| <p>DUJ...H60 Cable rack - sheet thickness 1.0 mm - width 100 - 400 mm - horizontal mounting - load capacity 10 kg/m</p> |  | <p>D1</p> |
| <p>DUD...H60 Cable rack - sheet thickness 1.2 mm - width 100 - 600 mm - vertical and horizontal mounting - load capacity 25 kg/m</p> |  | <p>D2</p> |
| <p>DUD...H45 Cable rack - sheet thickness 1.2 mm - width 100 - 400 mm - horizontal mounting - load capacity 10 kg/m</p> |  | <p>D3</p> |
| <p>DGOD Cable rack - sheet thickness 1.2 mm - width 100 - 400 mm - vertical and horizontal mounting - load capacity 20 kg/m</p> |  | <p>D4</p> |
| <p>DUP/DUOP...H60(DUP...H60) Cable rack - sheet thickness 1.5 mm - width 100 - 600 mm - vertical and horizontal mounting - load capacity 30 kg/m (40 kg/m for structure 64)</p> |  | <p>D5</p> |

| | | |
|---|--|------------------|
| <p>DGOP Cable rack - sheet thickness 1.5 mm - width 100 - 600 mm - vertical and horizontal mounting - load capacity 20 kg/m</p> |  | <p>D6</p> |
| <p>DFP Cable rack - sheet thickness 1.5 mm - width 100 - 400 mm - horizontal mounting - load capacity 20 kg/m</p> |  | <p>D7</p> |
| <p>DUVC...H60 Cable rack - sheet thickness 2.0 mm - width 100 - 600 mm - vertical mounting - load capacity 20 kg/m</p> |  | <p>D8</p> |
| <p>KGS...H60 Mesh tray - horizontal mounting - load capacity 5 kg/m - width 60-100 mm</p> |  | <p>S1</p> |
| <p>KDS/KDSO...H60(KDS...H60) KSG...H60 Mesh tray - width 60 - 600 mm - vertical and horizontal mounting - load capacity 20 kg/m (2 kg/m for KDS/KDSO60H60 and KSG60H60)</p> |  | <p>S2</p> |
| <p>KDSZ...H60 Mesh tray - width 60-400 mm - horizontal mounting - load capacity 20 kg/m (2 kg/m for KDSZ60H60)</p> |  | <p>S3</p> |

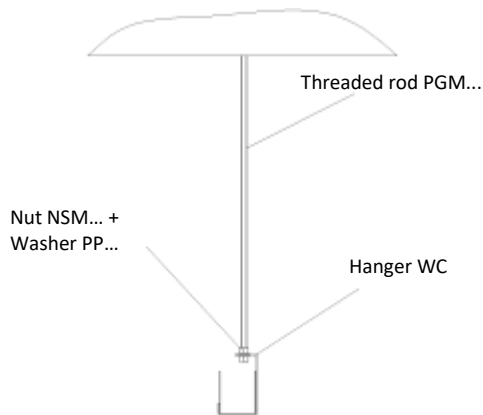
Ceiling structures

1

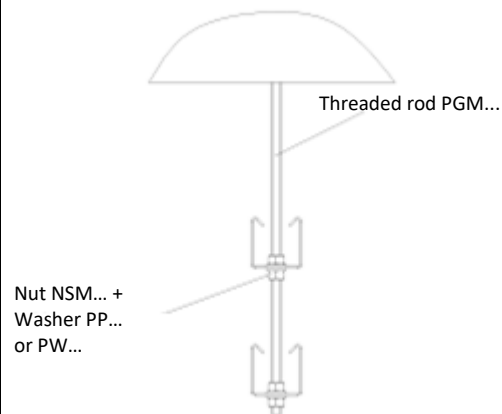
- maximum two route levels
- maximum load capacity of the structure 15 kg
- maximum load capacity per level 15 kg
- maximum tray width 100 mm
- maximum support spacing 1.5 m

2

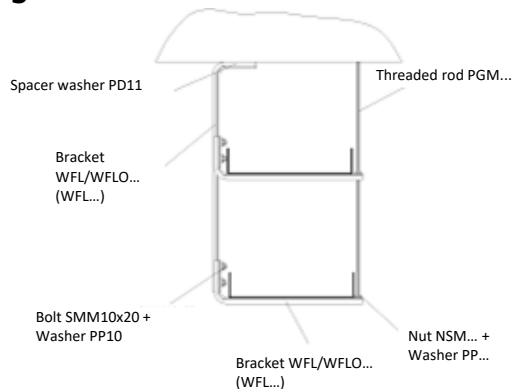
- maximum load capacity of the structure 3 kg
- maximum support spacing 1.5 m

3

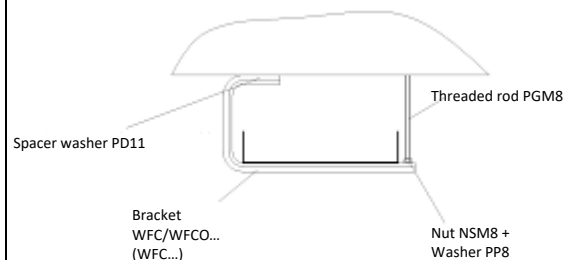
- maximum load capacity of the structure 7.5 kg
- maximum support spacing 1.5 m
- the WC hanger can be attached directly to the ceiling
- for tray width of 50 mm

4

- maximum two route levels
- maximum load capacity of the structure 15 kg
- maximum load capacity per level 7.5 kg
- maximum support spacing 1.5 m
- possibility to fix fire safety system devices (up to 3,5 kg) to the channel base

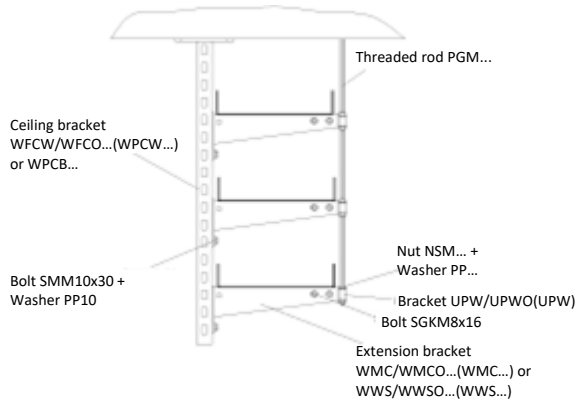
5

- maximum two route levels
- maximum load capacity of the structure 60 kg
- maximum extension bracket load capacity 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

6

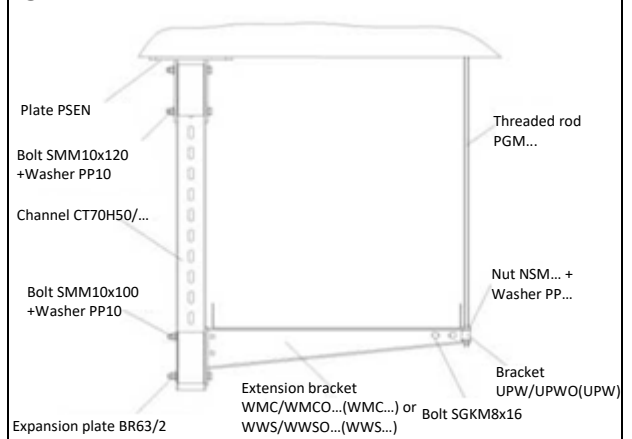
- maximum one route level
- maximum load capacity of the structure 30 kg
- maximum length of bracket/extension bracket 400 mm
- maximum support spacing 1.5 m

7



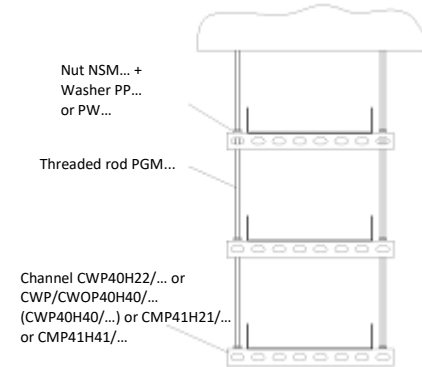
- maximum three route levels
- maximum load capacity of the structure 97.5 kg
- maximum extension bracket load capacity 37,5 kg
- maximum extension bracket length 400 mm
- it is possible to run routes on both sides of the support
- maximum support spacing 1.5 m

8



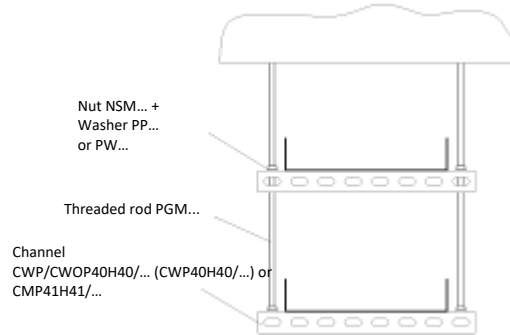
- maximum one route level
- maximum load capacity of the structure 37.5 kg
- maximum extension bracket length 600 mm
- maximum support spacing 1.5 m

9



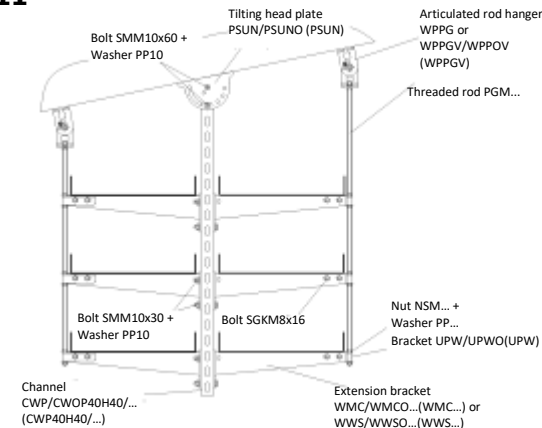
- maximum three route levels
- maximum load capacity of the structure 100 kg
- maximum load per channel 45 kg
- maximum channel length 700 mm
- maximum support spacing 1.5 m

10



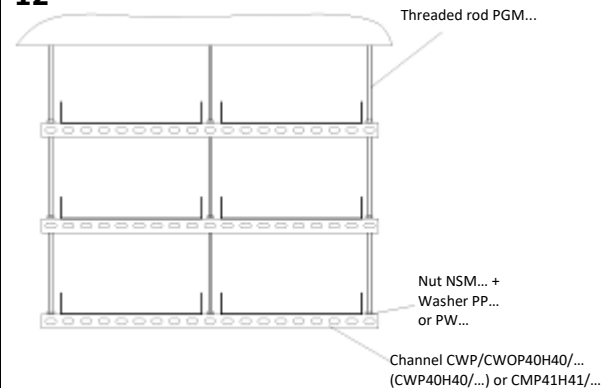
- maximum two route levels
- maximum load capacity of the structure 68 kg
- maximum load per channel 34 kg
- maximum channel length 500 mm
- maximum support spacing 1.7 m

11



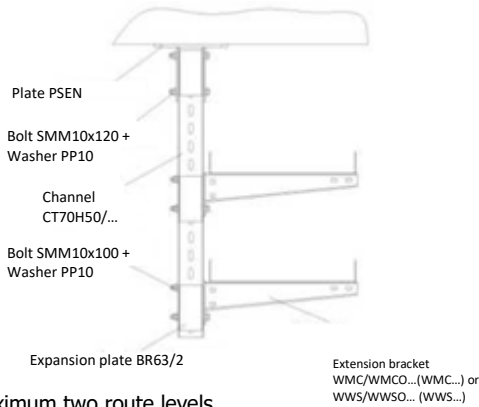
- maximum three route levels
- maximum load capacity of the structure 150 kg
- max. load per extension bracket 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

12



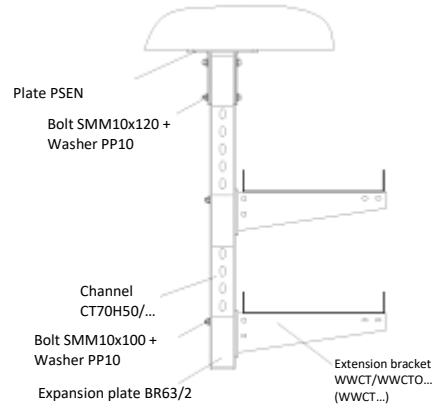
- maximum three route levels
- maximum load capacity of the structure 150 kg
- maximum load per route 30 kg
- maximum PGM rods spacing 650 mm
- maximum support spacing 1.5 m

13



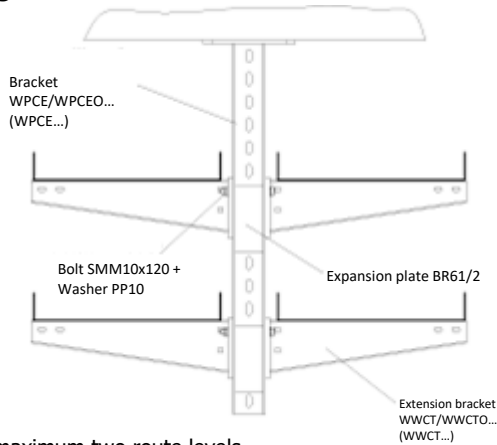
- maximum two route levels
- maximum load capacity of the structure 60 kg
- max. load per extension bracket 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

14



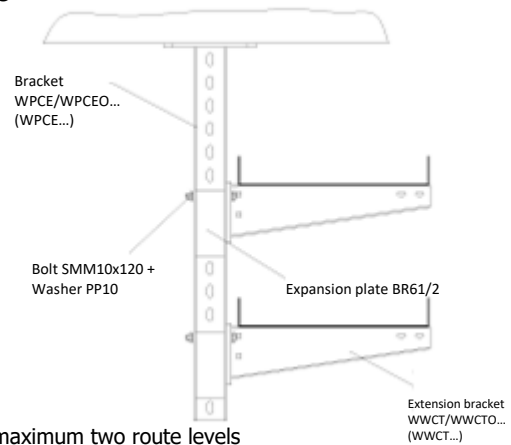
- maximum two route levels
- maximum load capacity of the structure 45 kg
- max. load per extension bracket 22.5 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

15



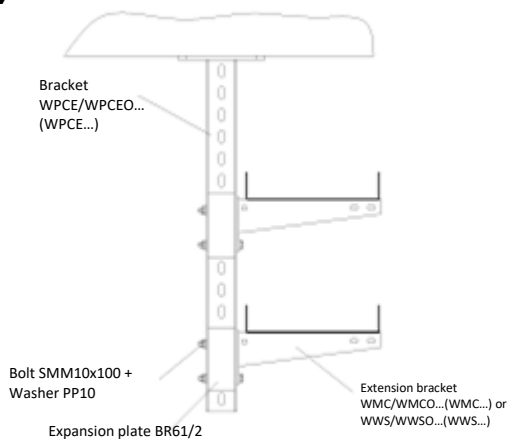
- maximum two route levels
- maximum load capacity of the structure 120 kg
- max. load per extension bracket 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

16



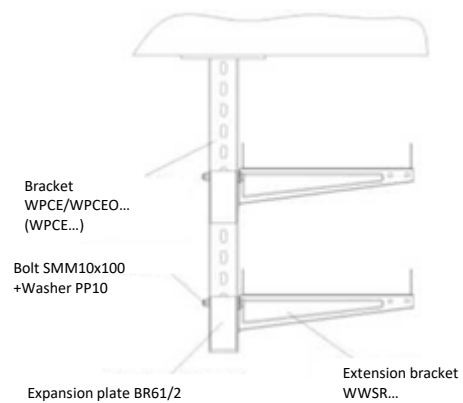
- maximum two route levels
- maximum load capacity of the structure 60 kg
- max. load per extension bracket 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

17



- maximum two route levels
- maximum load capacity of the structure 60 kg
- maximum load per extension bracket 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

18



- maximum two route levels
- maximum load capacity of the structure 60 kg
- maximum extension bracket load capacity 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

19

- maximum two route levels
- maximum load capacity of the structure 60 kg
- max. load per extension bracket 15 kg
- maximum extension bracket length 300 mm
- maximum support spacing 1.5 m

20

- maximum two route levels
- maximum load capacity of the structure 30 kg
- max. load per extension bracket 15 kg
- maximum extension bracket length 300 mm
- maximum support spacing 1.5 m

21

- maximum one route level
- maximum load capacity of the structure 30 kg
- maximum extension bracket load capacity 15 kg
- maximum extension bracket length 300 mm
- maximum support spacing 1.5 m

22

- maximum one route level
- max. load of the structure / extension bracket 30 kg
- maximum extension bracket length 600 mm
- maximum support spacing 1.5 m

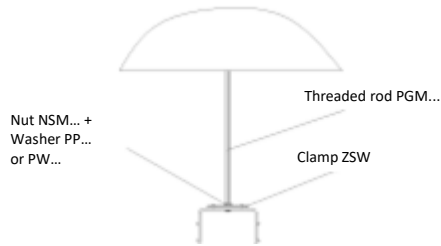
23

- maximum load capacity of the structure 2.25 kg
- fixing the hanger directly to the ceiling is permitted
- maximum support spacing 1.5 m

24

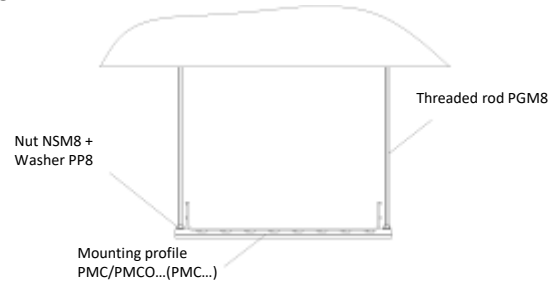
- maximum load capacity of the structure 7.5 kg
- fixing the bracket directly to the ceiling is permitted
- maximum support spacing 1.5 m

25



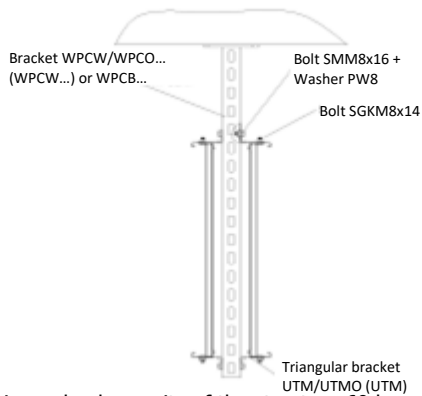
- maximum load capacity of the structure 3.6 kg
- for tray widths of 100 mm
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- maximum support spacing 1.2 m

26



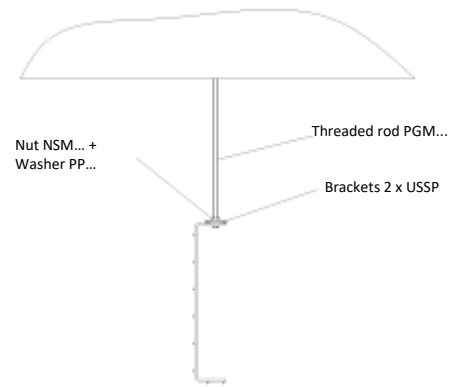
- maximum one route level
- maximum load capacity of the structure 22.5 kg
- maximum length of PMC/PMCO (PMC) profile - 400 mm
- maximum support spacing 1.5 m
- minimum tray width 100 mm

27



- maximum load capacity of the structure 60 kg
- maximum load capacity per rack 30 kg
- single-sided construction (with one rack) possible
- the cables should be fixed with UK1/UKO1 (UK1) brackets max every 600 mm
- maximum rack width 600 mm
- maximum support spacing 1.5 m

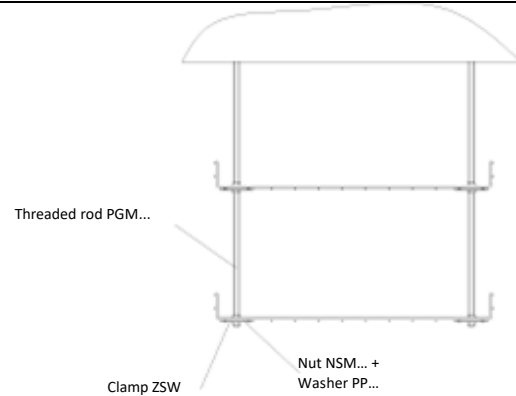
28



- maximum load capacity of the structure 12 kg
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 – 400 mm
- maximum support spacing 1.2 m

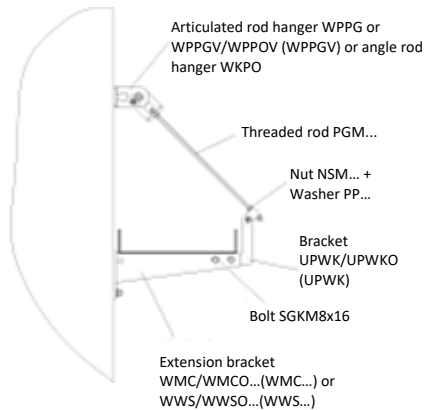
29

- maximum two route levels
- maximum load capacity of the structure 48 kg
- for tray widths of 100 – 600 mm
- maximum support spacing 1.5 m



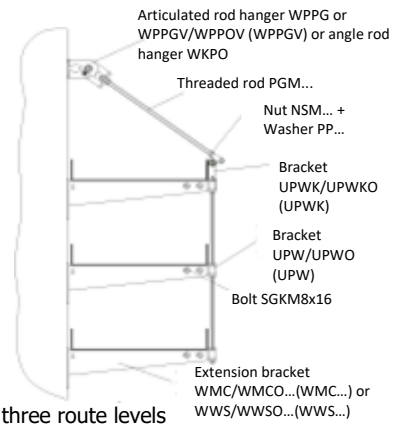
Wall structures

30



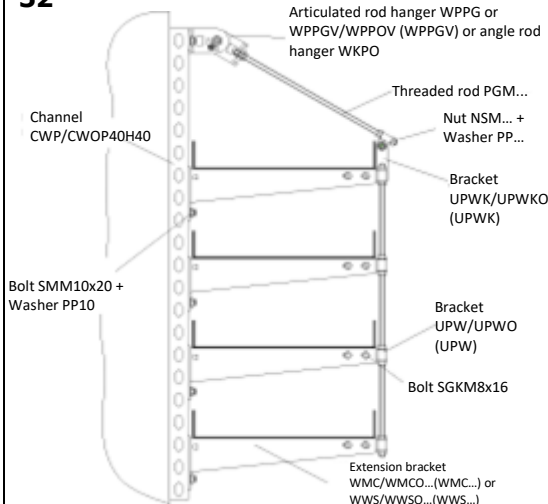
- maximum extension bracket load capacity 30 kg
- maximum extension bracket length 600 mm (400 mm for WMC/WMCO (WMC))
- maximum support spacing 1.5 m

31



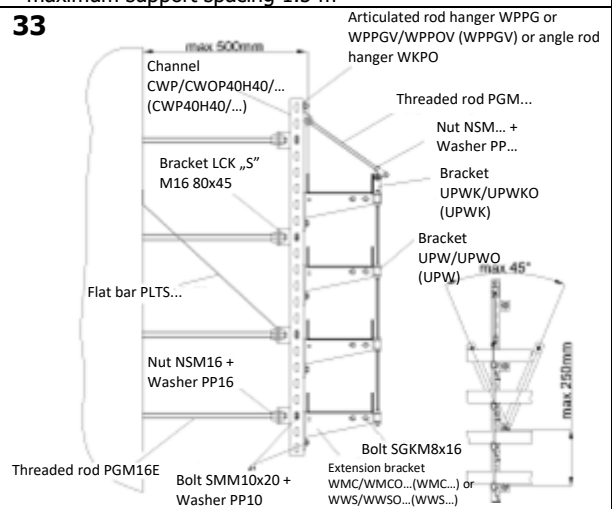
- maximum three route levels
- maximum extension bracket load capacity 30 kg
- maximum load capacity of the structure 90 kg
- maximum extension bracket length 600 mm (400 mm for WMC/WMCO (WMC))
- maximum support spacing 1.5 m

32



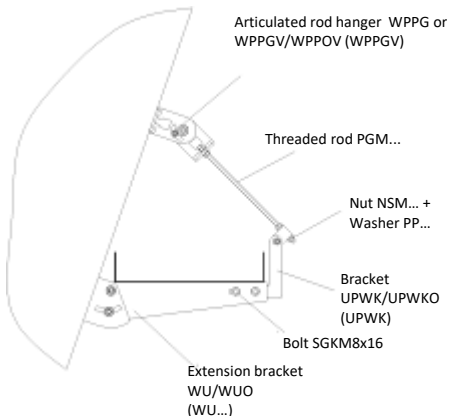
- maximum four route levels
- maximum extension bracket load capacity 30 kg
- maximum load capacity of the structure 120 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

33



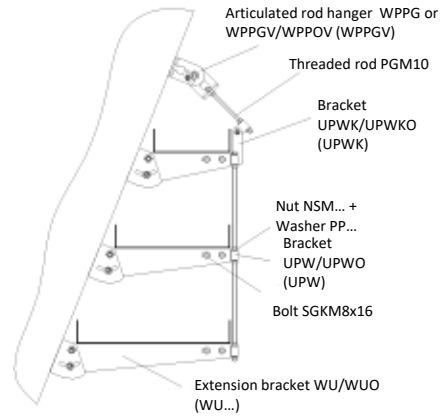
- maximum four route levels
- maximum extension bracket load capacity 24 kg
- maximum load capacity of the structure 96 kg
- maximum extension bracket length 200 mm
- maximum support spacing 1.2 m

34



- maximum extension bracket load capacity 30 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

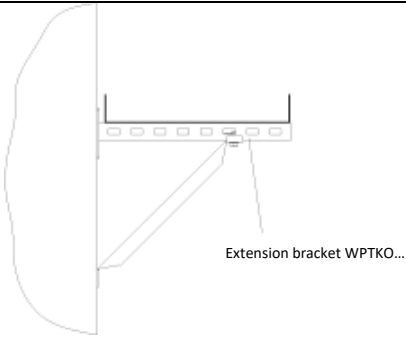
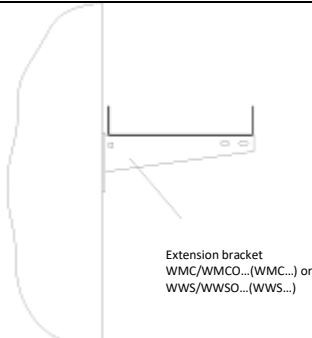
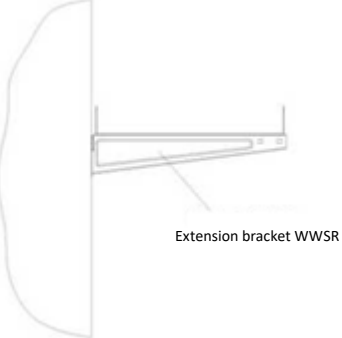
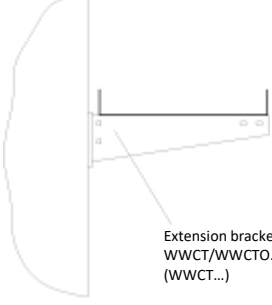
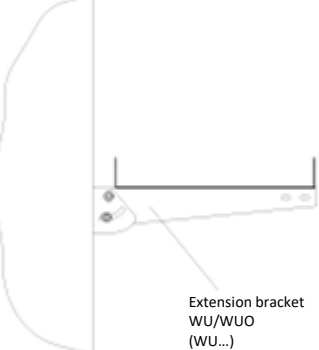

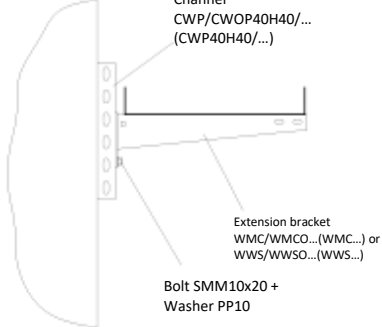
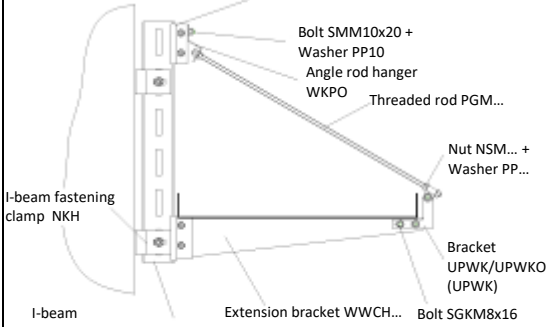
35



- maximum three route levels
- maximum extension bracket load capacity 30 kg
- maximum load capacity of the structure 90 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

36

37

| | |
|---|---|
|  <p>Extension bracket WPTKO...</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 400 mm - maximum support spacing 1.5 m |  <p>Extension bracket WMC/WMCO...(WMC...) or WWS/WWSO...(WWS...)</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 400 mm - maximum support spacing 1.5 m |
| <p>38</p>  <p>Extension bracket WWSR</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 300 mm - maximum support spacing 1.5 m | <p>39</p>  <p>Extension bracket WWCT/WWCTO...(WWCT...)</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 600 mm - maximum support spacing 1.5 m |
| <p>40</p>  <p>Extension bracket WU/WUO (WU...)</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 15 kg - maximum extension bracket length 300 mm - maximum support spacing 1.5 m | <p>41</p>  <p>Extension bracket WPT/WPTO100 (WPT100)</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 15 kg - maximum extension bracket length 100 mm - maximum support spacing 1.5 m |
| <p>42</p>  <p>Channel CWP/CWOP40H40/... (CWP40H40/...)</p> <p>Extension bracket WMC/WMCO...(WMC...) or WWS/WWSO...(WWS...)</p> <p>Bolt SMM10x20 + Washer PP10</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 400 mm - maximum support spacing 1.5 m | <p>43</p>  <p>I-beam bracket adapter OD</p> <p>Bolt SMM10x20 + Washer PP10</p> <p>Angle rod hanger WKPO</p> <p>Threaded rod PGM...</p> <p>Nut NSM... + Washer PP...</p> <p>Bracket UPWK/UPWKO (UPWK)</p> <p>Bolt SGK M8x16</p> <p>Extension bracket WWCH...</p> <p>I-beam fastening clamp NKH</p> <p>I-beam DPH...</p> <ul style="list-style-type: none"> - maximum extension bracket load capacity 30 kg - maximum extension bracket length 600 mm - maximum support spacing 1.5 m |

44

45

BOLT SGK M8x14

I-beam fastening clamp NKH

Extension bracket WWCH...

I-beam DPH...

- maximum extension bracket load capacity 30 kg
- maximum extension bracket length 600 mm
- maximum support spacing 1.5 m

Triangular bracket UTM.UTMO (UTM)

- maximum load capacity of the structure 30 kg
- the cables should be fixed with UK1/UKO1 (UK1) brackets max every 600 mm
- maximum rack width 600 mm
- maximum support spacing 1.5 m

46

Profile PMC/PMCO... (PMC...)

- maximum load capacity of the structure 22.5 kg
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 mm - 600 mm
- maximum support spacing 1.5 m

41

Mesh tray hanger WKS/WKSO60 (WKS60)

- maximum load capacity of the structure 2.25 kg
- maximum support spacing 1.5 m
- maximum tray width 60 mm

48

Clamp ZSW

- maximum load capacity of the structure 3 kg
- maximum support spacing 1.5 m
- maximum tray width 60 mm

49

USKPH100

- maximum load capacity of the structure 3 kg
- maximum support spacing 1.5 m
- maximum tray width 60 mm

50

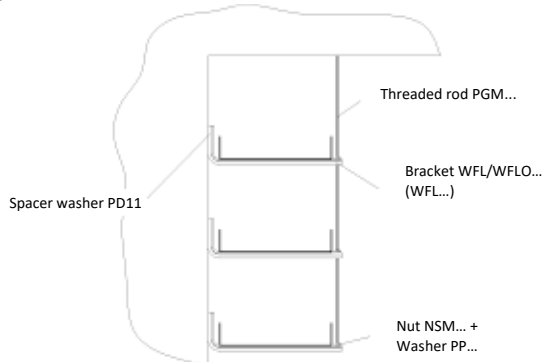
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 mm - 600 mm
- maximum support spacing 1.5 m

USKPH100

| Tray width [mm] | Max. Load [kg/m] | USKPH100 [pcs.] |
|-----------------|------------------|-----------------|
| 600 | 15 | 3 |
| 500 | 15 | 3 |
| 400 | 15 | 3 |
| 300 | 10 | 2 |
| 200 | 10 | 2 |
| 100 | 5 | 1 |

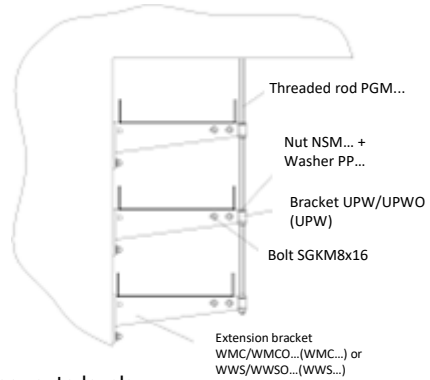
Wall and ceiling structures

51



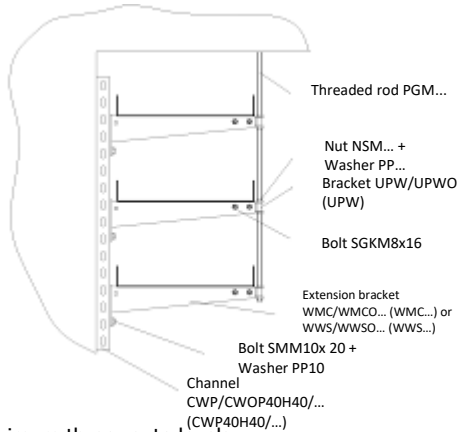
- maximum three route levels
- maximum load of bracket/extension bracket 30 kg
- maximum load capacity of the structure 75 kg
- maximum length of bracket/extension bracket 400 mm
- maximum support spacing 1.5 m

52



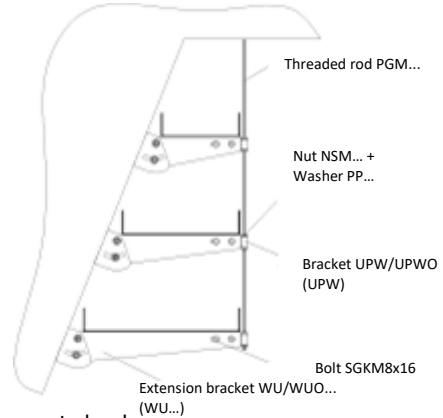
- maximum three route levels
- maximum extension bracket load capacity 37,5 kg
- maximum load capacity of the structure 97.5 kg
- maximum extension bracket length 600 mm (400 mm for WMC/WMCO (WMC))
- maximum support spacing 1.5 m

53



- maximum three route levels
- maximum extension bracket load capacity 30 kg
- maximum load capacity of the structure 90 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

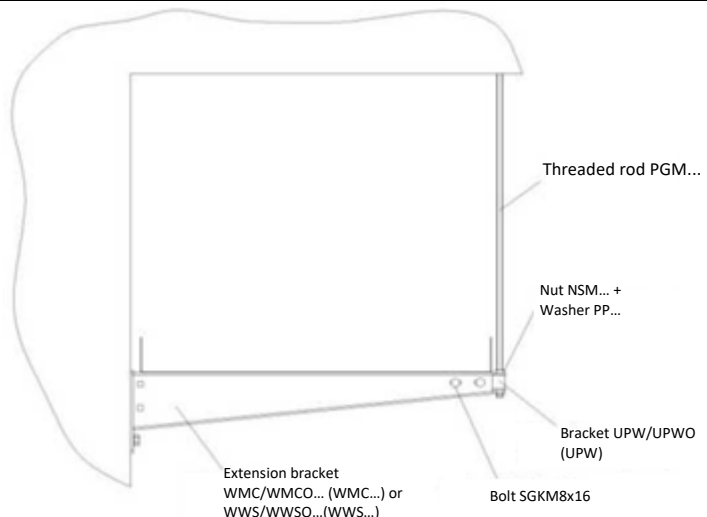
54



- maximum three route levels
- maximum extension bracket load capacity 30 kg
- maximum load capacity of the structure 90 kg
- maximum extension bracket length 400 mm
- maximum support spacing 1.5 m

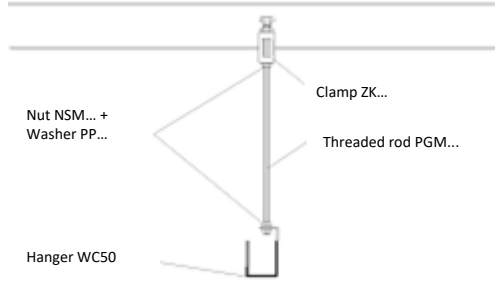
55

- maximum one route level
- maximum load capacity of the structure 37.5 kg
- maximum extension bracket length 600 mm
- maximum support spacing 1.5 m



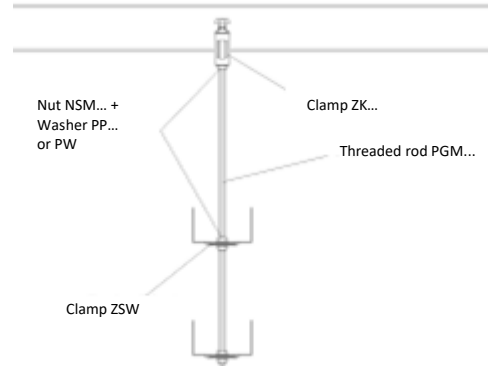
Fixing to steel structure

56



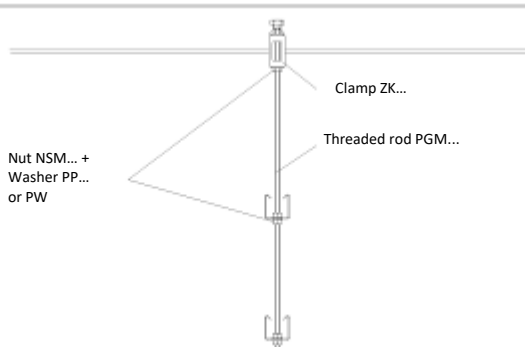
- maximum load per hanger 7.5 kg
- maximum support spacing 1.5 m
- for tray widths of 50 mm

57



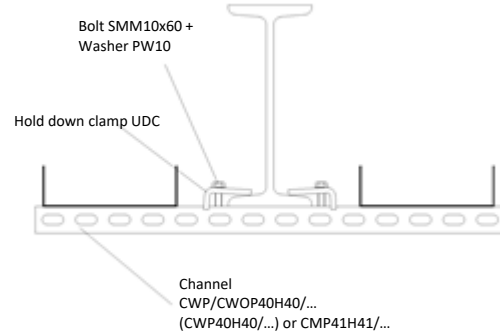
- maximum two route levels
- maximum load capacity per level 15 kg
- maximum load capacity of the structure 15 kg
- maximum tray width 100 mm
- maximum support spacing 1.5 m

58



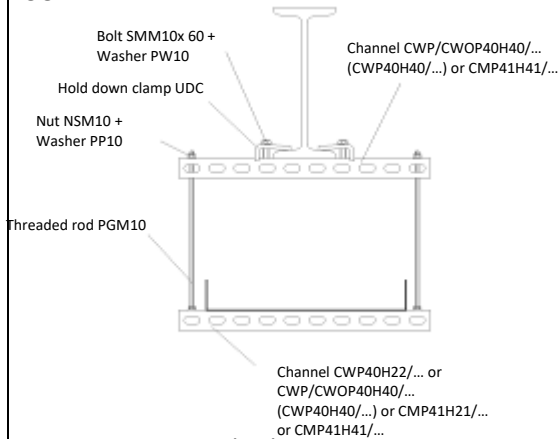
- maximum two route levels
- maximum load capacity of the structure 15 kg
- maximum load capacity per level 7.5 kg
- maximum support spacing 1.5 m
- possibility to fix fire safety system devices (up to 3,5 kg) to the channel base

59



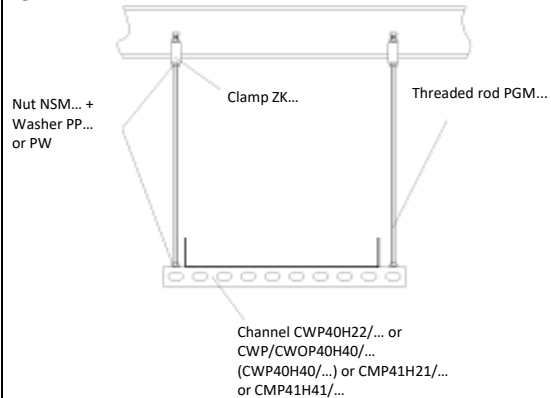
- single-sided construction allowed
- maximum one-sided load capacity of the channel 15 kg
- maximum load capacity of the structure 30 kg
- maximum width per route 200 mm
- maximum support spacing 1.5 m

60



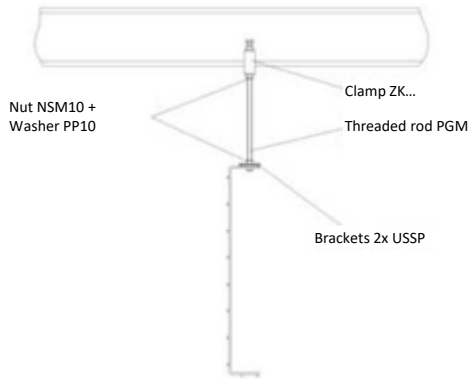
- maximum one route level
- maximum load capacity of the structure 15 kg
- maximum support spacing 1.5 m
- maximum route width 400 mm

61



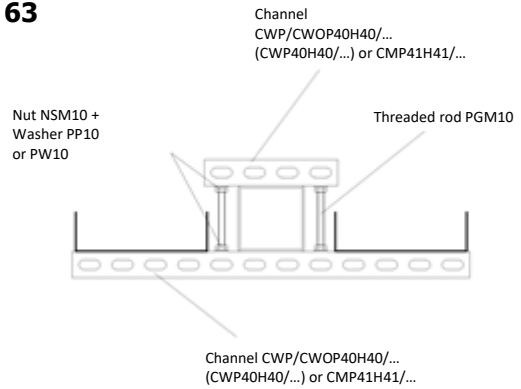
- maximum one route level
- maximum load capacity of the structure 30 kg
- maximum support spacing 1.5 m
- maximum route width 400 mm

62



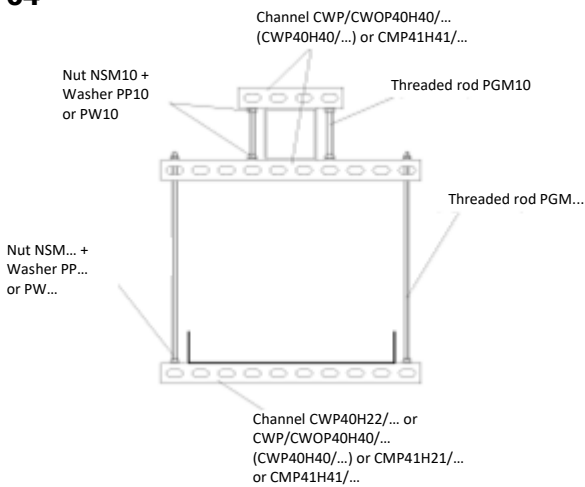
- maximum load capacity of the structure 12 kg
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 mm - 600 mm
- maximum support spacing 1.2 m

63



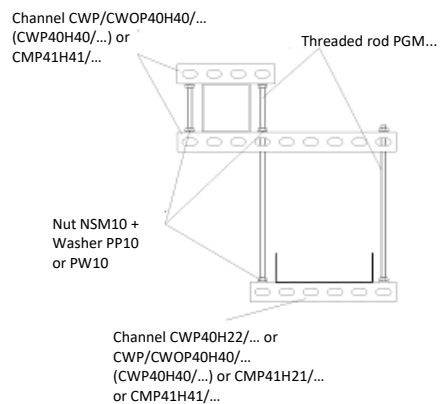
- single-sided construction allowed
- maximum one-sided load capacity of the channel 15 kg
- maximum load capacity of the structure 30 kg
- maximum width per route 200 mm
- maximum support spacing 1.5 m

64



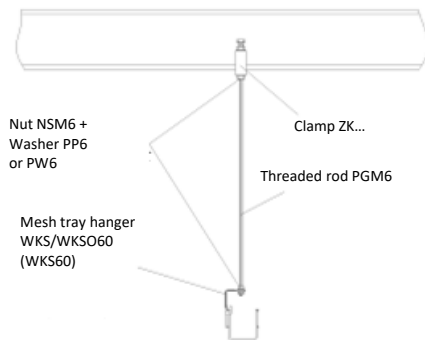
- maximum one route level
- maximum load capacity of the structure 15 kg
- maximum route width 400 mm
- maximum support spacing 1.5 m

65



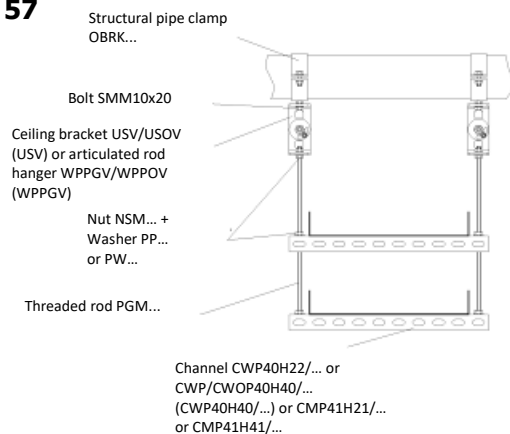
- maximum one route level
- maximum load capacity of the structure 15 kg
- maximum route width 200 mm
- maximum support spacing 1.5 m

66



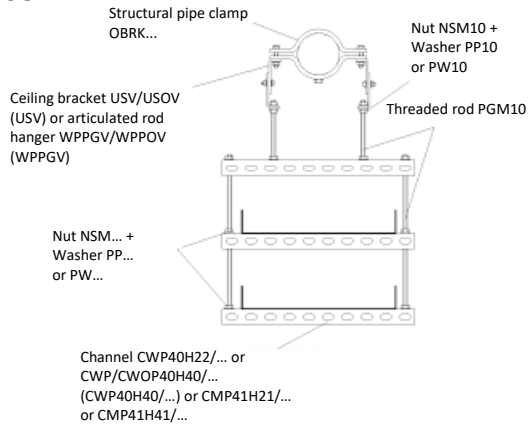
- maximum load per hanger 2.25 kg
- maximum support spacing 1.5 m
- maximum tray width 60 mm

57



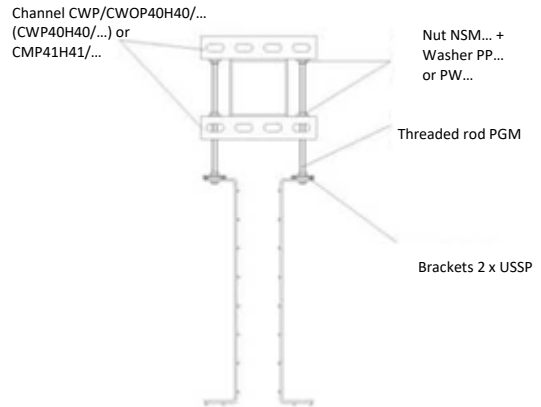
- maximum two route levels
- maximum load capacity per level 15 kg
- maximum load capacity of the structure 30 kg
- maximum route width 400 mm
- maximum support spacing 1.5 m

68



- maximum two route levels
- maximum load capacity per level 15 kg
- maximum load capacity of the structure 30 kg
- maximum route width 400 mm
- maximum support spacing 1.5 m

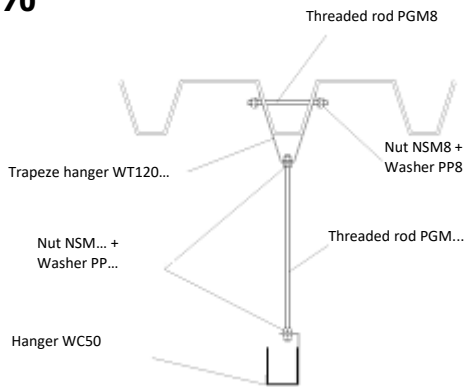
69



- maximum load per tray - 10 kg/m
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 mm - 400 mm
- maximum support spacing 1.2 m
- single tray construction allowed

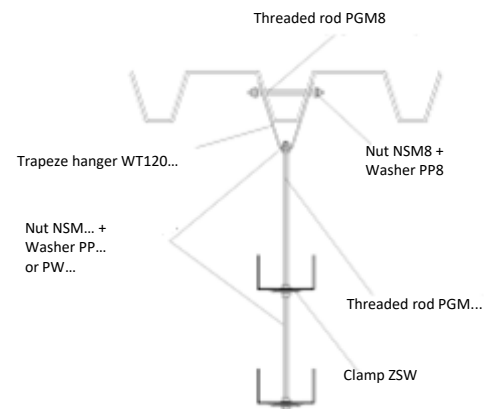
Fixing to trapezoidal sheet

70



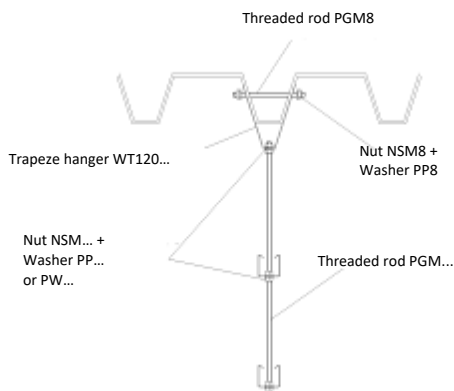
- maximum load per hanger 7.5 kg
- maximum support spacing 1.5 m
- for tray widths of 50 mm

71



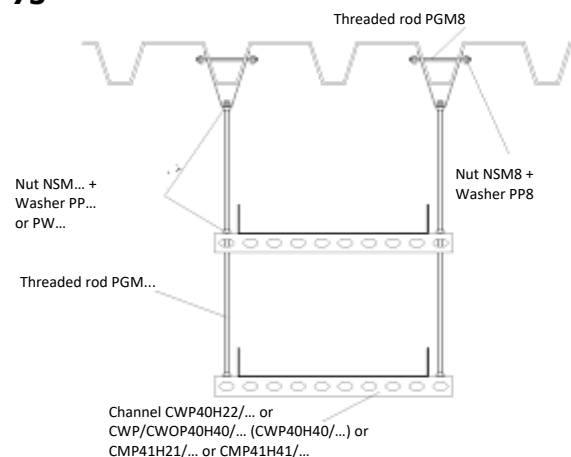
- maximum two route levels
- maximum load capacity per level 15 kg
- maximum load capacity of the structure 15 kg
- maximum tray width 100 mm
- maximum support spacing 1.5 m

72



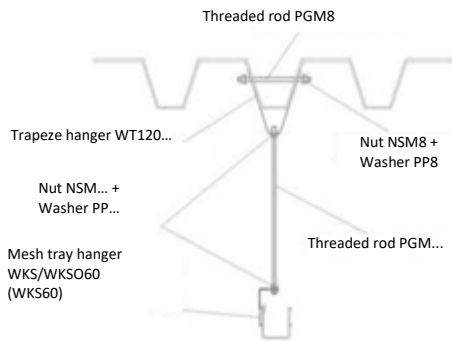
- maximum two route levels
- maximum load capacity of the structure 15 kg
- maximum load capacity per level 7.5 kg
- maximum support spacing 1.5 m
- possibility to fix fire safety system devices (up to 3,5 kg) to the channel base

73



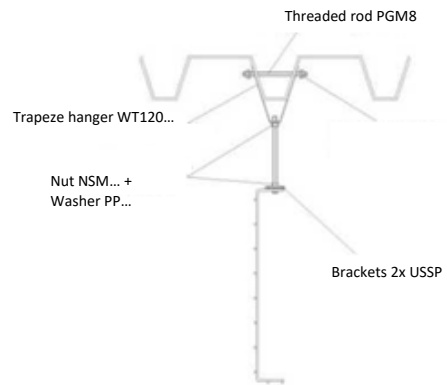
- maximum two route levels
- maximum load capacity per level 15 kg
- maximum load capacity of the structure 30 kg
- maximum support spacing 1.5 m
- maximum route width 400 mm

74



- maximum load capacity of the structure 2.25 kg
- maximum support spacing 1.5 m
- maximum tray width 60 mm

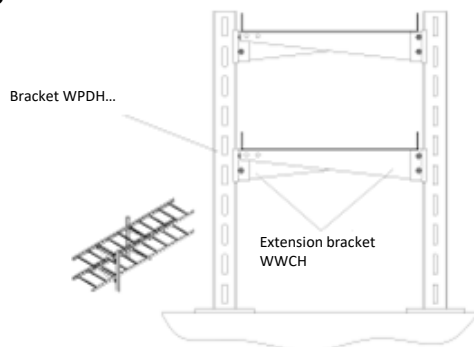
75



- maximum load capacity of the structure 12 kg
- the cables should be fixed with UKZ1/UKZO1 (UKZ1) brackets max every 600 mm
- for tray widths of 100 mm - 400 mm
- maximum support spacing 1.2 m

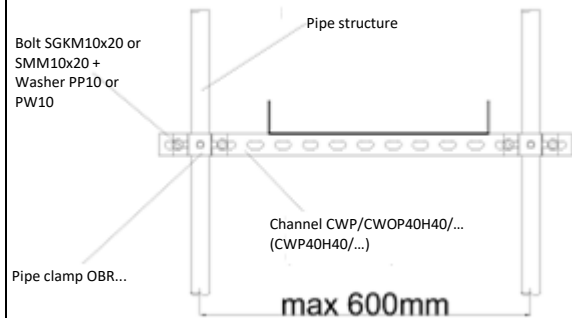
Fixing to floor or elevated floor structure

76



- maximum two route levels
- maximum load capacity per level 40 kg
- maximum load capacity of the structure 80 kg
- maximum route width 600 mm
- maximum support spacing 1.0 m

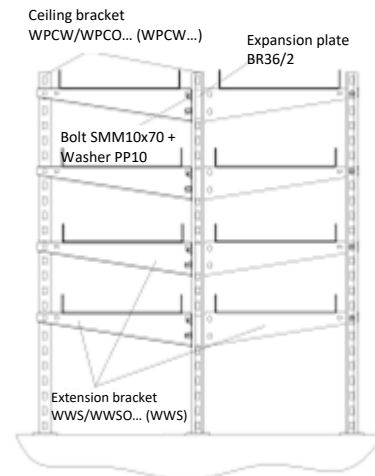
77



- maximum load capacity of the structure 24 kg
- maximum support spacing 1.2 m

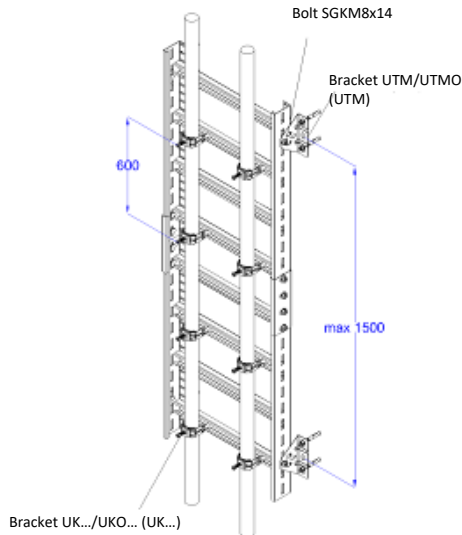
78

- maximum four route levels
- maximum load per route 30 kg
- maximum load capacity of the structure 240 kg
- maximum route width 400 mm
- maximum height of the brackets 1,5 m
- maximum support spacing 1.5 m
- it is possible to run routes on one side of the structure



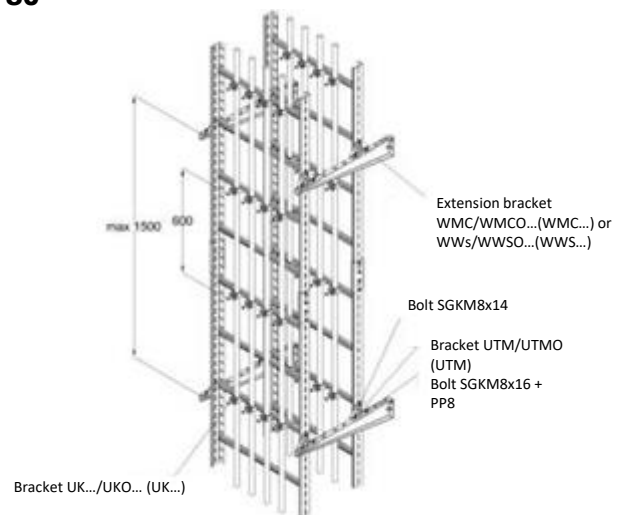
Vertical structures

79



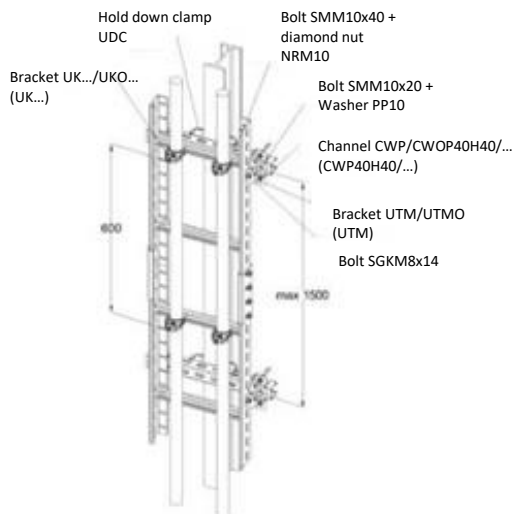
- maximum load capacity of the support structure 30 kg
- maximum rack width 600 mm
- fixing the rack upside down horizontally on the ceiling is permitted

80



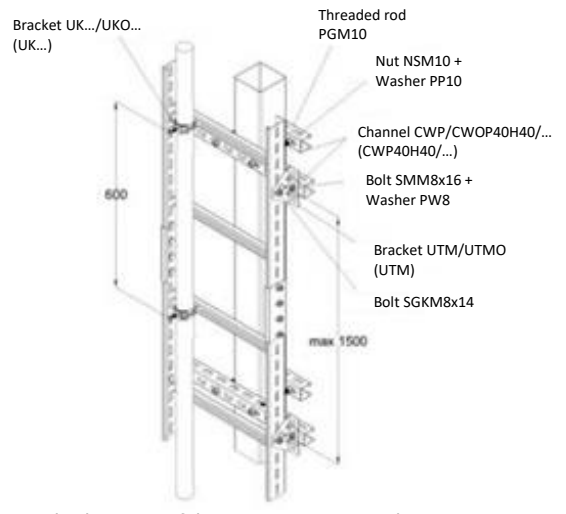
- maximum load capacity of the support structure 60 kg
- maximum load capacity per rack 30 kg
- maximum rack width 600 mm
- fixing the rack upside down horizontally on the ceiling is permitted

81



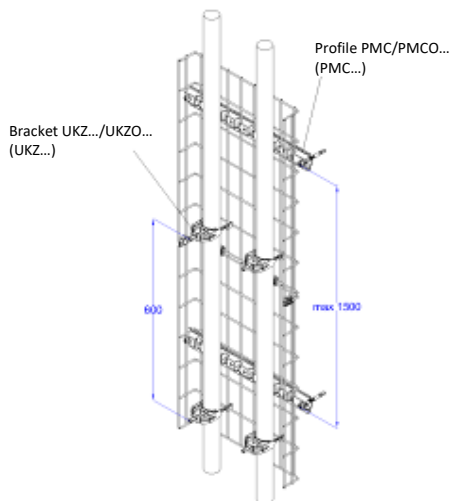
- maximum load capacity of the support structure 30 kg
- maximum rack width 400 mm

82



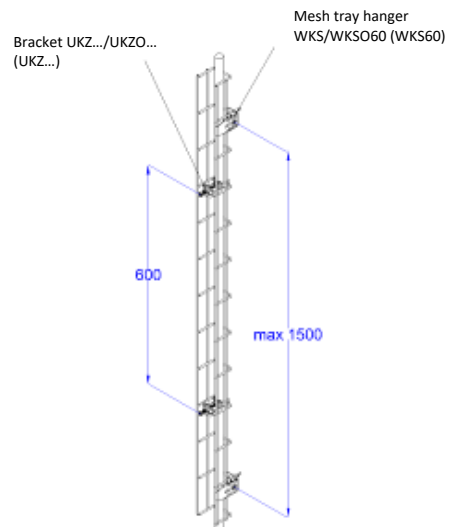
- maximum load capacity of the support structure 30 kg
- maximum rack width 400 mm

83



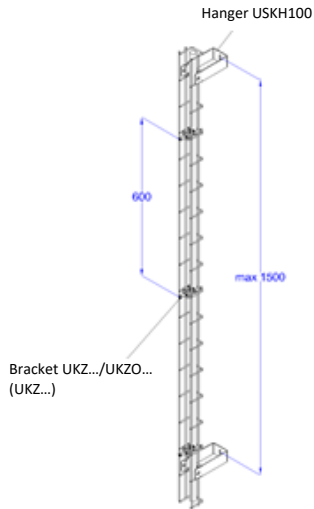
- maximum load capacity of the support structure 30 kg
- for tray width of 100-600 mm
- fixing the tray upside down horizontally on the ceiling is permitted

84



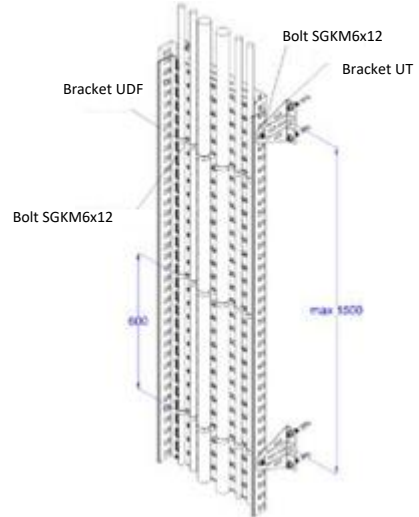
- maximum load capacity of the support structure 3 kg
- fixing the tray upside down horizontally on the ceiling is permitted
- maximum tray width 60 mm

85



- maximum load capacity of the support structure 3 kg
- fixing the tray upside down horizontally on the ceiling is permitted
- maximum tray width 60 mm

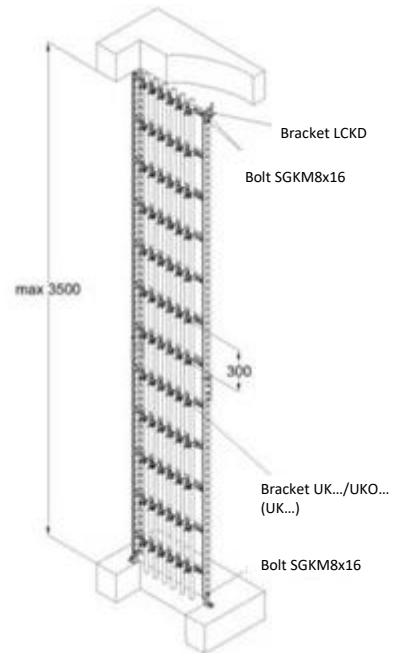
86



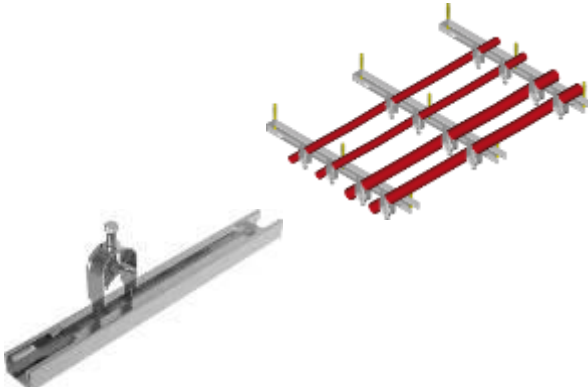
- maximum load capacity of the support structure 30 kg
- maximum tray width 400 mm
- fixing the tray upside down horizontally on the ceiling is permitted

87

- maximum rack load - 20 kg/m
- maximum rack width 600 mm



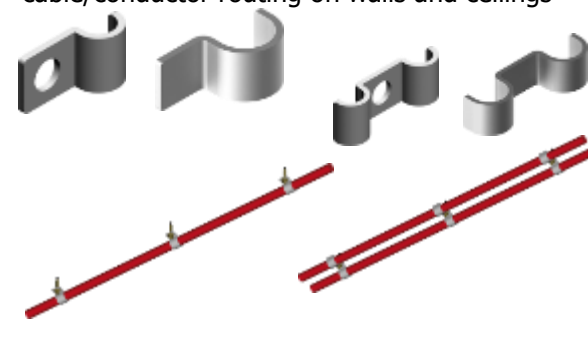
SD/SDO...(SD) + UK/UKO...(UK) **U1**
 Rung + bracket
 - rung spacing max. 600 mm
 - vertical and horizontal cable/conductor routing
 - cable/conductor routing on walls and ceilings



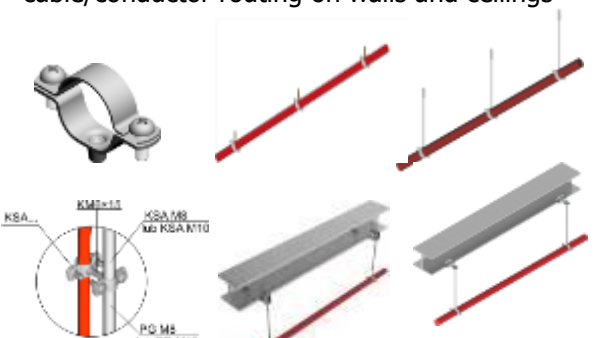
CMSC41H21 + UK/UKO...(UK) **U2**
 channel + bracket
 - distance between channels max. 800 mm
 - vertical and horizontal cable/conductor routing
 - cable/conductor routing on walls and ceilings




UDF..., UEF... **U3**
 Cable clip
 - bracket spacing max. 600 mm
 - vertical and horizontal cable/conductor routing
 - cable/conductor routing on walls and ceilings



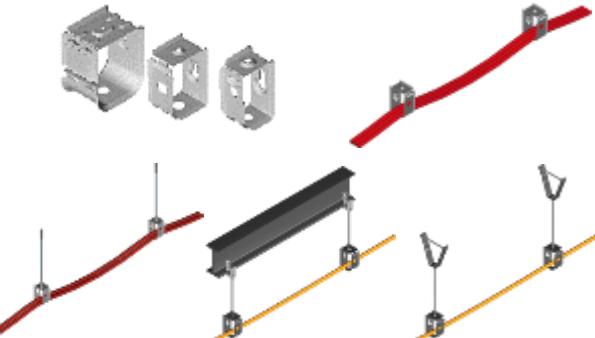
KSA... **U4**
 Cable clamp
 - clamps spacing max. 600 mm
 - vertical and horizontal cable/conductor routing
 - cable/conductor routing on walls and ceilings



KSA... **U5**
 Cable clamp
 - clamps spacing max. 600 mm
 - cable/conductor routing vertical and horizontal
 - cable/conductor routing on walls and ceilings



OZ/OZO(OZ), OZS/OZSO(OZS), OZM/OZMO(OZM) **U6**
 Cable clamp
 - clamps spacing max. 600 mm
 - cable/conductor routing, horizontal
 - cable/conductor routing on walls and ceilings



**OZ/OZO(OZ), OZS/OZSO(OZS),
OZM/OZMO(OZM)****U7**

Cable clamp

- clamps spacing max. 800 mm
- cable/conductor routing, horizontal
- cable/conductor routing on walls and ceilings

**RU... + KSA/OBS****U8**

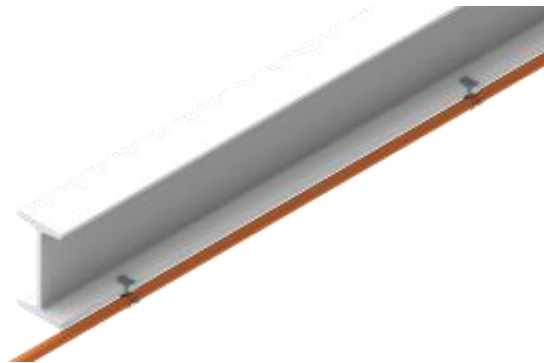
Thin-walled pipe

- Clamps spacing max. 1.5 m
- cable/conductor routing, horizontal
- cable/conductor routing on walls and ceiling

**ZSK1**

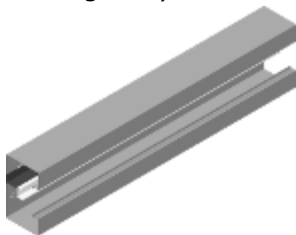
Clamp

- clamps spacing max. 600 mm
- cable/conductor routing, horizontal
- fixing to steel structure

U9**KS...H68**

Wall trunking

- width 115 – 170 mm
- mounting every 0.8 m

N

CLASSIFICATION OF CABLE SYSTEMS ON SPECIAL CABLE SUPPORT STRUCTURES

Annex 2 Table 1. **Group K1** cables classification - Special support structures - **KGL/KGOL...H60, KCL/KCOL...H60**

| | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
|-----------|-----------------------------------|----------|----------|-------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|--------------|--------------|-----------|-----------|-----------|--------------|--|
| BITNER | NHXH E90 = NHXH-J E90 | | | E90 | E90 | E90 | E60 | E90 | E90 | E60 | E90 | | | E90 | E90 | | | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | | | E90 | E90 | E90 | | E90 | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| | NHXCH E90 | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| | (N)HXCH E90 | | | E60 | E30 | E60 | | E30 | E60 | | E60 | | | E60 | E60 | | | E60 | | |
| | BiTflame 1000 E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | BiTflame 1000 C E90 | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| | BiTflame S E90 | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| | BiTservo FS E90 | | | E30 | E30 | E30 | | E30 | E30 | | E30 | | | E30 | E30 | | | E30 | | |
| | HDGs E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HDGsekwf E90 | E90 | | | E90 | | | | E90 | | | | | E90 | | | | E90 | | |
| | HTKSH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw E90 | E90 | | E60 | E60 | E60 | | E60 | E60 | | E60 | | | E90 | E60 | E60 | | E90 | E60 | |
| HLGs(zo) | | | E60 | | E60 | | | | E60 | | E60 | | | E60 | E60 | | | E60 | | |
| DÁTWYLE R | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | (N)HXH | | | E60 | E30 | E60 | | E30 | E60 | | E60 | | | E60 | E60 | | | E60 | | |
| | (N)HXCH | | | E60 | E30 | E60 | | E30 | E60 | | E60 | | | E60 | E60 | | | E60 | | |
| ELKOND | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | JE-H(st)H | | | | E90 | | | E90 | | | | | | | | | | | | |
| | 1-CXKH-V (1.5-10mm ²) | | | E90 | E90 | E90 | | E90 | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| | SHXKFH-V180 | | | E90 | E90 | E90 | | E90 | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| ELPAR | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | (N)HXH = (N)HXH-J | | | | E60 | | | E60 | | | | | | | | | | | | |
| | NHXCH | | | | E30 | | | E30 | | | | | | | | | | | | |
| | HDGs | | | | E30 | | | E30 | | | | | | | | | | | | |
| | HTKSH | | | | E30 | | | E30 | | | | | | | | | | | | |
| EUPEN | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | (N)HXH = (N)HXH-J | | | E30 | | E30 | | | E30 | | E30 | | | E30 | E30 | | | E30 | | |
| | (N)HXCH | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| KABLOTEK | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | NHXCH | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| MADEX | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | NHXH - NHXH-J | | | E60 | | E60 | | | E60 | | E60 | | | E60 | E60 | | | E60 | | |
| | NHXCH | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |
| NKT | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 | |
| | NHXH = NHXH-J | | | E90 | | E90 | | | E90 | | E90 | | | E90 | E90 | | | E90 | | |

| PRAKAB | Cable type | | | | | | | | | | | | | | | | | |
|--------------------------|--------------------------------------|----------|-------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|-----------|--------------|--------------|-----------|-----------|-----------|--------------|
| | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 |
| | (N)HXH | | E90 | E90 | E90 | | E90 | E90 | | E90 | | | E90 | E90 | | | E90 | |
| | SSKFH-V180 | | E60 | E90 | E60 | | E90 | E60 | | E60 | | | E60 | E60 | | | E60 | |
| TECHNOKABEL | Cable type | | | | | | | | | | | | | | | | | |
| | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 |
| | NHXH E90 = NHXH-J E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | | | E60 | E90 | E60 | | E90 | E60 | | E60 | | | E60 | E60 | | | E60 |
| | (N)HXCH E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | | | E90 | E90 | | | E90 |
| | JE-H(St)H E30 - E90 | | E90 | E90 | | E90 | | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HDGs E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | | | E90 | E90 | | | E90 |
| | HDGsekw E30-E90 | E30 | | | | | | | | | | | E30 | | | | E30 | |
| HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| HTKSHekw E30-E90 | | | E90 | | E90 | E90 | | E90 | E90 | E90 | | | E90 | E90 | | | E90 | |
| TELEFONIKA | Cable type | | | | | | | | | | | | | | | | | |
| | 1 | 3 | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 56 | 57 | 60-61 | 64-68 | 70 | 71 | 73 | 76-78 |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | | | | E60 | | | E60 | | | | | | | | | | |
| | FLAME-X 950 NHXCH E90 | | | | E60 | | | E60 | | | | | | | | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E60 |
| | FLAME-X 950 (N)HXCH E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 |
| | JE-H(St)H | E30 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E30 | E90 | E90 | | E30 | E90 |
| | FLAME-X 950 HDGs E30-E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 |
| FLAME-X 950 HTKSH E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | |
| FLAME-X 950 HTKSHekw E90 | E60 | | E90 | E60 | E90 | E90 | E60 | E90 | E90 | E90 | | E60 | E90 | E90 | | E60 | E90 | E60 |

Annex 2 Table 2. **Group K2** cable classification - Special support structures - **KGL100H42, KCL100H42**

| BITNER | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-68 | 73 |
|-------------|--------------------------------------|-------------------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|-----------|
| | | Bitflame 1000 E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | Bitflame 1000 C E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 |
| | HTKSH E90 | E60 | E90 | E60 | E90 | E60 | E60 | E60 | E60 | E60 |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-68 | 73 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGsekw E30-E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 |
| | HDGsekw-W E30-E90 | | E90 | | E90 | | | | | |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKShekw E30-E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-68 | 73 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 (N)HXCH E90 | | E90 | | E90 | | | | | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HTKSH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HTKShekw E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |

Annex 2 Table 3. **K3** cable classification - Special support structures - **CWP/CWOP40H40**

| BITNER | Cable type | 4 | 58 | 72 |
|-------------|-------------------|----------|-----------|-----------|
| | HDGs E90 | E90 | E90 | E90 |
| | HDGsekwf E90 | E90 | E90 | E90 |
| | HTKSH E90 | E90 | E90 | E90 |
| | HTKShekw E90 | E90 | E90 | E90 |
| TECHNOKABEL | Cable type | 4 | 58 | 72 |
| | HDGs E30-E90 | E90 | E90 | E90 |
| | HTKSH E30-E90 | E90 | E90 | E90 |
| | HTKShekw E30-E90 | E60 | E60 | E60 |
| TELEFONIKA | Cable type | 4 | 58 | 72 |
| | JE-H(St)H | E90 | E90 | E90 |

Annex 2 Table 4. **Group K4** cable classification - Special support structures - **KFL...H60**

| | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
|--------------|--|----------|----------|-------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|--------------|--------------|--------------|-----------|-----------|-----------|
| BITNER | (N)HXH E90 = (N)HXH-J E90 | | E90 | | E30 | | E30 | | | E90 | | | | | E90 | | |
| | Bitflame 1000 E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | | E90 |
| | HDGs E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | | E90 |
| | HTKSH E90 | | E90 | E30 | E90 | E30 | E90 | E30 | E30 | E90 | | E30 | E30 | E30 | E90 | | E30 |
| DÄTWYLER | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | (N)HXH | | E60 | E30 | E60 | E30 | E60 | E30 | E30 | E60 | | E30 | E30 | E30 | E60 | | E30 |
| | (N)HXCH | | | | E90 | | E90 | | | | | | | | | | |
| | JE-H(St)H | | | | E30 | | E30 | | | | | | | | | | |
| ELKOND | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | NHXH = NHXH-J (1.5-10mm ²) | | E90 | | E30 | | E30 | | | E90 | | | | | E90 | | |
| | 1-CXKH-V (1.5-10mm ²) | E90 | E90 | E30 | E90 | E30 | E90 | E30 | E30 | E90 | E90 | E30 | E30 | E30 | E90 | E90 | E30 |
| | SSKFH-V180 P60 | E30 | E30 | | | | | | | E30 | E30 | | | | E30 | E30 | |
| | SHKFH-V180 P90 | | E90 | | | | | | | E90 | | | | | E90 | | |
| | SHXKFH-V180 | E90 | | | E60 | | E60 | | | | E90 | | | | | E90 | |
| EUPEN | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | (N)HXH = (N)HXH-J | | | | E90 | | E90 | | | | | | | | | | |
| | (N)HXCH | | | | E90 | | E90 | | | | | | | | | | |
| | JE-H(st)H | | | | E30 | | E30 | | | | | | | | | | |
| ERSE | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | (N)HXH = (N)HXH-J | | | E90 | | E90 | | E90 | E90 | | | E90 | E90 | E90 | | | E90 |
| | (N)HXCH | | | E90 | | E90 | | E90 | E90 | | | E90 | E90 | E90 | | | E90 |
| | JE-H(st)H | | | E90 | | E90 | | E90 | E90 | | | E90 | E90 | E90 | | | E90 |
| STUDER | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | (N)HXH = (N)HXH-J | | | | E30 | | E30 | | | | | | | | | | |
| | (N)HXCH | | | | E30 | | E30 | | | | | | | | | | |
| | (N)HXCH E30 | | | | E30 | | E30 | | | | | | | | | | |
| | JE-H(St)H | | | | E30 | | E30 | | | | | | | | | | |
| | JE-H(St)HRH | | | | E30 | | E30 | | | | | | | | | | |
| TECHNOKABEL | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 |
| | NHXH E90 = NHXH-J E90 | | E90 | | E90 | | E90 | | | E90 | | | | | E90 | | |
| | NHXHX E90 | | E90 | | | | | | | E90 | | | | | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | | E60 | E90 | E60 | E90 | E60 | E60 | | E90 | E60 | E60 | E60 | | E90 | E60 |
| | NHXCH E90 | E90 | | | E90 | | E90 | | | | E90 | | | | | E90 | |
| | (N)HXCH E90 | | | E90 | | E90 | | E90 | E90 | | | E90 | E90 | E90 | | | E90 |
| | (N)HXCH-J SERVO E90 | | | | E90 | | E90 | | | | | | | | | | |
| HDGs E30-E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 |
| | HDGs-W E30-E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | | | E90 | E90 | E90 | | | E90 |

| | | | | | | | | | | | | | | | | | | |
|------------|---------------------------------------|----------|----------|-------------|--------------|--------------|--------------|--------------|-----------|-----------|-----------|--------------|--------------|--------------|-----------|-----------|-----------|-----|
| | HDGszo-W E30-E90 | | | | E90 | | E90 | | | | | | | | | | | |
| | HTKSH E30-E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw E30-E90 | | | E60 | E90 | E60 | E90 | E60 | E60 | | | E60 | E60 | E60 | E90 | E60 | E60 | |
| | Cable type | 1 | 3 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 56 | 57 | 60-61 | 64-65 | 67-68 | 70 | 71 | 73 | |
| TELEFONIKA | FLAME-X 950 NHXH E90 = NHXH-J E90 | | | | E90 | | E90 | | | | | | | | | | | |
| | FLAME-X 950 (N)HXH E90 = (N)HXH-J E90 | | | E90 | E90 | E90 | E90 | E90 | | | | E90 | E90 | E90 | | | E90 | |
| | FLAME-X 950 (N)HXCH E90 | | E60 | E90 | E60 | E90 | E60 | E90 | E90 | E60 | | E90 | E90 | E90 | E60 | | E90 | |
| | JE-H(St)H | | | E90 | E90 | E90 | E90 | E90 | E90 | | | E90 | E90 | E90 | | | E90 | |
| | FLAME-X 950 HDGs E30-E90 | | E90 | E90 | E30 | E90 | E30 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | | E90 | |
| | FLAME-X 950 HTKSH E90 | | E30 | E90 | E30 | E90 | E30 | E90 | E90 | E30 | | E90 | E90 | E90 | E30 | | E90 | |
| | FLAME-X 950 HTKSHekw E90 | | | E60 | | E60 | | E60 | E60 | | | | E60 | E60 | E60 | | | E60 |

Annex 2 Table 5. **Group K5** cable classification - Special support structures - **KLFL75H60**

| | | |
|-------------|-----------------------|----------|
| BITNER | Cable type | 2 |
| | BiTflame 1000 E90 | E90 |
| | HDGs E90 | E90 |
| | HTKSH E90 | E90 |
| TECHNOKABEL | Cable type | 2 |
| | NHXH E90 = NHXH-J E90 | E90 |
| | HDGs E30-E90 | E90 |
| | HTKSH E30-E90 | E90 |

Annex 2 Table 6. **Group K6** cable classification - Special support structures - **KBL...H60**

| | Cable type | 5-12 | 30-32 | 34-35 | 51-53 | 54 | 55 | 60-61 | 64-68 | 73 |
|-------------|---------------------------|--------------------------------------|-------|-------|-------|-----|-----|-------|-------|-----|
| | | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | | E90 | | E90 | E90 | E90 |
| BITNER | BITflame 1000 E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | Cable type | 5-12 | 30-32 | 34-35 | 51-53 | 54 | 55 | 60-61 | 64-68 | 73 |
| | | NHXH E90 = NHXH-J E90 | E30 | E30 | | E30 | | E30 | E30 | E30 |
| TECHNOKABEL | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E30-E90 | E90 | E90 | E60 | E90 | E60 | E90 | E90 | E90 | E90 |
| | HTKSH E30-E90 | E90 | E90 | E60 | E90 | E60 | E90 | E90 | E90 | E90 |
| | Cable type | 5-12 | 30-32 | 34-35 | 51-53 | 54 | 55 | 60-61 | 64-68 | 73 |
| | | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E30 | E90 | E30 | E90 | E90 | E90 |
| TELEFONIKA | FLAME-X 950 (N)HXCH E90 | E30 | E30 | E90 | E30 | E90 | E30 | E30 | E30 | E30 |
| | JE-H(St)H | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | FLAME-X 950 HDGs E30-E90 | E30 | E30 | E90 | E30 | E90 | E30 | E30 | E30 | E30 |
| | FLAME-X 950 HTKSH E90 | E30 | E30 | E60 | E30 | E60 | E30 | E30 | E30 | E30 |
| | FLAME-X 950 HTKSHekw E90 | E30 | E30 | E60 | E30 | E60 | E30 | E30 | E30 | E30 |

Annex 2 Table 7. **Group K7** cables classification - Special support structures - **KGJ/KGOJ.H60, KCJ/KCOJ.H60**

| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
|--------|---------------------------|-----------------------|-------|-------|-----|-------|-------|-------|----|-----|-------|-------|-------|-----|-------|-----|
| | | NHXH E90 = NHXH-J E90 | E90 | | E90 | | | | | E90 | | E90 | E90 | E90 | E90 | E90 |
| BITNER | (N)HXH E90 = (N)HXH-J E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | NHXCH E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH E90 | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | BiTflame 1000 E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTflame 1000 C E90 | E60 | E90 | E60 | | | E90 | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | BiTflame S E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTflame AS E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTflame AS(St) E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTservo FS E90 | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | BiTservo FS MICA E90 | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | HDGs E90 | E30 | E30 | E30 | | | E30 | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | HDGsekwf E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HTKSH E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HTKSHekw E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HLGs(z0) | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |

| | | | | | | | | | | | | | | | | |
|----------|-----------------------------------|-------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|--------------|-----------|
| DÄTWYLER | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | (N)HXH | E90 | E30 | E90 | | | E30 | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | E30 | E90 | | | E30 | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(St)H | E30 | E30 | E30 | | | E30 | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| ELKOND | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | 1-CXKH-V (1.5-10mm ²) | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | SSKFKH-V180 | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | SHXKFKH-V180 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| ELPAR | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | NHXH = NHXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH = (N)HXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | NHXCH | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HDGs | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | HTKSH | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| EUPEN | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | (N)HXH = (N)HXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(st)H | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| ERSE | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | (N)HXH = (N)HXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(st)H | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| KABLOTEK | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | NHXH = NHXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(St)H | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | LINCH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| MADEX | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | NHXH - NHXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HTKSH | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | HTKSHekw | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| NKT | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | NHXH = NHXH-J | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |

| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
|------------------|--------------------------------------|-------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|--------------|-----------|
| PRAKAB | PRAFlaDur 1-CCXKH-V180 | E30 | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | (N)HXH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | SSKFH-V180 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| STUDER | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | (N)HXH = (N)HXH-J | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(St)H | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | JE-H(St)HRH | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXHX E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E30 |
| | NHXCH E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH-J SERVO E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | NHXHRHX E90 = NHXHRHX-J E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(St)H E30 - E90 | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | HDGs E30-E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 |
| | HDGs-W E30-E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGszo E30-E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HDGszo-W E30-E90 | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | HTKSH E30-E90 | E90 | E60 | E90 | | E90 | E60 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| HTKShekw E30-E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 86 |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 NHXCH E90 | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 (N)HXCH E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | JE-H(St)H | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 HTKSH E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 HTKShekw E90 | E90 | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| HLGsekwf | E60 | | E60 | | | | E60 | | E60 | E60 | E60 | E60 | E60 | | | |

Annex 2 Table 8. **Group K8** cable classification - Special support structures - **KFJ...H60**

| | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
|----------|---------------------------|----------|-------------|--------------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|-----------|
| BITNER | NHXH E90 = NHXH-J E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | | E60 | | E60 | | E60 | E60 | | E60 | E60 | E60 | | E60 |
| | BiTflame 1000 E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | BiTservo FS E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HDGs E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HTKSH E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HLGs(zo) | | E30 | | E30 | | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| DÄTWYLER | (N)HXH | | E30 | E90 | E30 | E90 | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | (N)HXCH | | E30 | E90 | E30 | E90 | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | JE-H(St)H | | | E30 | | E30 | | | | | | | | |
| ELKOND | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | NHXH = NHXH-J | | | E90 | | E90 | | | | | | | | |
| | 1-CXKH-V | | E30 | E60 | E30 | E60 | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | SSKFFH-V180 | | E30 | E90 | E30 | E90 | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | SHXKFFH-V180 | | | E90 | | E90 | | | | | | | | |
| EUPEN | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | (N)HXH = (N)HXH-J | | | E90 | | E90 | | | | | | | | |
| | (N)HXCH | | | E90 | | E90 | | | | | | | | |
| | JE-H(st)H | | | E30 | | E30 | | | | | | | | |
| ERSE | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | (N)HXH = (N)HXH-J | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | (N)HXCH | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | JE-H(st)H | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| STUDER | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | (N)HXCH | | | E30 | | E30 | | | | | | | | |
| | (N)HXCH E30 | | | E30 | | E30 | | | | | | | | |

| | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
|-------------|--------------------------------------|----------|-------------|--------------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|-----------|
| | | | | | | | | | | | | | | |
| TECHNOKABEL | NHXH E90 = NHXH-J E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | NHXCH E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | (N)HXCH-J SERVO E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | JE-H(St)H E30 - E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HTKSH E30-E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HTKSHekw E30-E90 | | E30 | | E30 | | E30 | E30 | | E30 | E30 | E30 | | E30 |
| | HLGs E30-E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | HLGs-W | | E60 | | E60 | | E60 | E60 | | E60 | E60 | E60 | | E60 |
| | HLGsekw E30-E90 | | E30 | | E30 | | E30 | E30 | | E30 | E30 | E30 | | E30 |
| TELEFONIKA | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 (N)HXCH E90 | | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | JE-H(St)H | | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 HDGs E30-E90 | | E90 | E60 | E90 | E60 | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 HTKSH E90 | | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 HTKSHekw E90 | | E90 | | E90 | | E90 | E90 | | E90 | E90 | E90 | | E90 |
| VLG | Cable type | 1 | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 57 | 60-61 | 64-65 | 67-68 | 71 | 73 |
| | (N)HXH E90 | | E90 | | E90 | | E90 | | | E90 | E90 | E90 | | E90 |
| | (N)HXH E30 | | E90 | | E90 | | E90 | | | E90 | E90 | E90 | | E90 |
| | JE-H(St)H E90 | | E90 | | E90 | | E90 | | | E90 | E90 | E90 | | E90 |
| | JE-H(St)H E30 | | E30 | | E30 | | E30 | | | E30 | E30 | E30 | | E30 |

Annex 2 Table 9. **Group K9** cable classification - Special support structures - **KBJ...H60**

| | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 |
|-----------------------|--------------------------------------|-------------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|--------------|
| BITNER | (N)HXH E90 = (N)HXH-J E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | BiTflame 1000 E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | BiTflame S-M(St) | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HDGs E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSH E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| ERSE | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 |
| | (N)HXH = (N)HXH-J | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | (N)HXCH | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| | JE-H(st)H | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 |
| | NHXH E90 = NHXH-J E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E30 |
| | (N)HXH E90 = (N)HXH-J E90 | E60 | E30 | E60 | E30 | E60 | E60 | E60 | E60 | E60 | E60 | |
| | NHXCH E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | |
| | (N)HXCH E90 | E90 | E30 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | (N)HXCH-J SERVO E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | |
| | HDGs E30-E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGszo-W E30-E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | |
| | HTKSH E30-E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | E90 |
| | HTKSHekw E30-E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HLGsekwzo E30-E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E60 | E90 | E60 | E90 | E60 | E60 | E60 | E60 | E60 | E60 | E30 |
| | FLAME-X 950 (N)HXCH E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | N2XH | | | | | | | | | | | E60 |
| | JE-H(St)H | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | E30 |
| | FLAME-X 950 HDGs E30-E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | E30 |
| FLAME-X 950 HTKSH E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | E30 | |

Annex 2 Table 10. **K10** cable classification - Special support structures - **KCD/KCOD...H60**

| BITNER | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
|-------------|--|-----------------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|
| | | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| ELKOND | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | NHXH = NHXH-J (1.5-10mm ²) | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | N2XH P30 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | N2XH P60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | JE-H(st)H | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| TECHNOKABEL | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | JE-H(St)H E30 - E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGsekwżo E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSHekw E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |

Annex 2 Table 11. **K11** cable classification - Special support structures - **KCP/KCOP.H60**

| BITNER | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 |
|----------|---------------------------|-----------------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|
| | | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | | E90 | E60 | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | NHXCH E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | (N)HXCH E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | BiTflame 1000 E90 | E90 | | E90 | E60 | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | BiTflame 1000 C E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | BiTservo FS E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | HDGs E90 | E90 | E30 | E90 | | | E30 | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | HDGsekwf E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | HTKSH E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | HTKSHekw E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| DÄTWYLER | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 |
| | (N)HXH | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | JE-H(St)H | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 |
| | JE-H(St)HRH | E30 | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 |

| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | |
|--------------------------------------|---------------------------|----------------------------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|-----|
| EUPEN | (N)HXH = (N)HXH-J | E60 | | E60 | | | | E60 | | E60 | | E60 | | E60 | E60 | E60 | |
| | (N)HXCH | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | JE-H(st)H | E60 | | E60 | | | | E60 | | E60 | | E60 | | E60 | E60 | E60 | |
| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | |
| KABLOTEK | NHXH = NHXH-J | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | JE-H(St)H | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | |
| MADEX | NHXH - NHXH-J | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | NHXCH | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | HTKSH | E30 | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | |
| | HTKSHekw | E30 | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | |
| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | |
| TECHNOKABEL | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | (N)HXHX | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | NHXCH E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | (N)HXCH E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | |
| | (N)HXCH-J SERVO E90 | E90 | E90 | E90 | | E60 | E90 | E90 | E60 | E90 | | E90 | | E90 | E90 | E90 | |
| | JE-H(St)H E30 - E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | HDGs E30-E90 | E90 | E90 | E90 | | E30 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HDGs-W E30-E90 | E90 | E30 | E90 | | | E30 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | HDGszo-W E30-E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | HTKSH E30-E90 | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw E30-E90 | E90 | E90 | E90 | | E30 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HLGs E30-E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | |
| | TELEFONIKA | FLAME-X 950 NHXH E90= NHXH-J E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 |
| | | FLAME-X 950 NHXCH E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 |
| FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| FLAME-X 950 (N)HXCH E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| N2XH | | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| JE-H(St)H | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | |
| FLAME-X 950 HDGs E30-E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| FLAME-X 950 HTKSH E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |
| FLAME-X 950 HTKSHekw E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | |

| VLG | Cable type | 5-12 | 13-22 | 30-32 | 33 | 34-35 | 36-42 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 |
|-----|---------------|------------|-------|-------|-----|-------|-------|-------|----|----|----|-------|----|-------|-------|----|
| | | (N)HXH E90 | | | | E90 | | | | | | | | | | |
| | JE-H(St)H E90 | | | | E90 | | | | | | | | | | | |

Annex 2 Table 12. **Group D1** cable classification - Special support structures - **DUJ...H60**

| BITNER | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
|-------------|--------------------------------------|-------------------|-------|-------|-----|-------|-------|-------|-----|
| | | BiTflame 1000 E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | BiTflame S-M | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | BiTflame S-M(St) | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGsekwf E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | HTKSH E90 | E30 | E30 | E30 | E30 | E30 | E30 | E30 | E30 |
| TECHNOKABEL | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | (N)HXH E90 = (N)HXH-J E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | (N)HXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | E30 | E30 | E30 | E30 | E30 | E30 | E30 | E30 |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSHekw E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| TELEFONIKA | Cable type | 5-12 | 30-32 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |

Annex 2 Table 13. **Group D2** cable classification - Special support structures - **DUD...H60**

| | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
|-------------|---------------------------|-------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|--------------|--------------|
| BITNER | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | NHXCH E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTflame 1000 E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | BiTflame 1000 C E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTservo FS E90 | E30 | E90 | E30 | | E90 | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | HDGs E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | HDGsekwf E90 | | E90 | | | E90 | | | | | | | | | |
| | HTKSH E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| HLGs(zo) | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | | | |
| DÄTWWLER | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | (N)HXH | | E30 | | | E30 | | | | | | | | | |
| | (N)HXCH | | E30 | | | E30 | | | | | | | | | |
| | JE-H(St)H | | E30 | | | E30 | | | | | | | | | |
| ELPAR | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | NHXH = NHXH-J | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | (N)HXH = (N)HXH-J | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | NHXCH | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HDGs | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| HTKSH | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | | | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXHX E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | NHXCHX | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH-J SERVO E90 | E60 | E90 | E60 | | E90 | E60 | | E60 | E60 | E60 | E60 | E60 | | E90 |
| | HDGs E30-E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | HDGs-W E30-E90 | E90 | | E90 | E30 | | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSH E30-E90 | E90 | | E90 | E60 | | E90 | E60 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSHekw E30-E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 |
| | HLGs E30-E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| HLGs-W | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | | | |

| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
|------------|--------------------------------------|------|-------|-------|-------|-------|-------|-----|-----|-------|-------|-------|-----|-------|-------|-----|
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E60 | | E60 | | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | E90 | |
| | FLAME-X 950 NHXCH E90 | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | JE-H(St)H | E90 | E30 | E90 | | E30 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E30 | E90 | | E30 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 HTKSH E90 | E60 | | E60 | | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 | | E90 |
| | FLAME-X 950 HTKSHekw E90 | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | | |
| HLGsekwf | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 | | | |

Annex 2 Table 14. **Group D3** cable classification - Special support structures - **DUD.H45**

| BITNER | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 |
|--------------------------|--------------------------------------|------|-------|-------|-------|-------|-------|-----|-----|-------|-------|-------|-----|
| | (N)HXH E90 = (N)HXH-J E90 | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 |
| | BiTflame 1000 E90 | E30 | | E30 | | | E30 | | E30 | E30 | E30 | E30 | E30 |
| HTKSH E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E60 | E90 | E90 | E60 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E30 | E90 | E30 | | E90 | E30 | | E30 | E30 | E30 | E30 | E30 |
| | NHXCH E90 | E60 | E60 | E60 | | E60 | E60 | | E60 | E60 | E60 | E60 | E60 |
| | (N)HXCH E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH-J SERVO E90 | | E60 | | | E60 | | | | | | | |
| | HDGs E30-E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | E90 | | E90 | | | E90 | | E90 | E90 | E90 | E90 | E90 |
| HTKSH E30-E90 | E60 | | E60 | | | E60 | E30 | E60 | E60 | E60 | E60 | E60 | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 34-35 | 36-42 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HDGs E30-E90 | | E90 | | | E90 | | | | | | | |
| | FLAME-X 950 HTKSH E90 | | E90 | | | E90 | | | | | | | |
| FLAME-X 950 HTKSHekw E90 | | E90 | | | E90 | | | | | | | | |

Annex 2 Table 15. **Group D4** cable classification - Special support structures - **DGOD...H60**

| | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
|--------------------------|--------------------------------------|-------------|--------------|-----------|--------------|--------------|--------------|-----------|--------------|-----------|-----------|--------------|--------------|--------------|-----------|--------------|--------------|
| BITNER | NHXH E90 = NHXH-J E90 | E30 | | | E30 | | | | E30 | | E30 | E30 | E30 | E30 | E30 | | |
| | (N)HXH E90 = (N)HXH-J E90 | | | | | E90 | | | | E90 | | | | | | | |
| | NHXCH E90 | E90 | | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | BiTflame 1000 E90 | | | | | E90 | | | | E90 | | | | | | | |
| | HDGs E90 | | | | | E90 | | | | E90 | | | | | | | |
| | HTKSH E90 | | | | | E90 | | | | E90 | | | | | | | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | NHXH E90 = NHXH-J E90 | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E30 | E90 | | E30 | E90 | E90 | | E30 | E90 | E30 | E30 | E30 | E30 | E30 | | |
| | NHXCH E90 | | | | | E90 | | | | E90 | | | | | | | |
| | (N)HXCH E90 | E90 | | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXCH-J SERVO E90 | | | | | E90 | | | | E90 | | | | | | | |
| | JE-H(St)H E30 - E90 | E60 | | | E60 | E90 | | | E60 | E90 | E60 | E60 | E60 | E60 | E60 | | |
| | HDGs E30-E90 | | E90 | | | E30 | E90 | | | E30 | | | | | | | |
| | HDGs-W E30-E90 | E90 | | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HTKSH E30-E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| HTKSHekw E30-E90 | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 60-61 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | | | | | E90 | | | | E90 | | | | | | | |
| | FLAME-X 950 NHXCH E90 | | | | | E90 | | | | E90 | | | | | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E60 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E90 | E90 | E90 | E60 | E90 | E90 | E90 | E60 | E90 | E90 | E90 | E90 | E90 | E60 | E90 |
| | JE-H(St)H | | | | | E90 | | | | E90 | | | | | | | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HTKSH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| FLAME-X 950 HTKSHekw E90 | E90 | E90 | E60 | E90 | E90 | E90 | E90 | E60 | E90 | E90 | E90 | E90 | E90 | E90 | E60 | E90 | |

Annex 2 Table 16. **Group D5** cable classification - Special support structures - **DUP/DUOP...H60**

| | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
|----------------|-----------------------------|-------------|--------------|-----------|--------------|-----------|--------------|-----------|-----------|-----------|--------------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|--------------|-----|
| BITNER | NHXXH E90 = NHXXH-J E90 | E30 | E90 | | E30 | | E90 | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E60 | E30 | E90 | | E60 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E30 | E90 | |
| | NHXCH E90 | E90 | E90 | | E90 | | E90 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | (N)HXCH E90 | E90 | | E30 | E90 | E30 | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E30 | E30 | |
| | BiTflame 1000 E90 | E90 | E60 | E60 | E90 | | E60 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E60 | E90 | |
| | BiTflame 1000 C E90 | E30 | E60 | E60 | E30 | | E60 | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | E30 | E90 | E90 |
| | BiTflame FS | E30 | | | E30 | | | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | | | |
| | HDGs E90 | E90 | E90 | E30 | E90 | E30 | E90 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E60 | E90 |
| | HDGsekwf E90 | E30 | E90 | E90 | E30 | | E90 | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | E30 | E90 | |
| | HTKSH E90 | E90 | E90 | E90 | E90 | | E90 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| HTKSHekw E90 | E90 | E90 | E90 | E90 | | E90 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | |
| DÄTWYLER | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | (N)HXH | | E60 | | | | E60 | | | | | | | | | | | | | | |
| | (N)HXCH | | E90 | | | | E90 | | | | | | | | | | | | | | |
| | JE-H(St)H | | E30 | | | | E30 | | | | | | | | | | | | | | |
| ELPAR | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | NHXXH = NHXXH-J | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | (N)HXH = (N)HXH-J | E60 | | | E60 | | | | | | E60 | E60 | | E60 | | E60 | E60 | E60 | | | |
| | NHXCH | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | (N)HXCH | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | HDGs | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | HTKSH | E30 | | | E30 | | | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | | | |
| STUDER | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | (N)HXH = (N)HXH-J | E60 | E30 | | E60 | | E30 | | | | E60 | E60 | | E60 | | E60 | E60 | E60 | | | |
| | (N)HXCH | E90 | E60 | | E90 | | E60 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | JE-H(St)H | E30 | | | E30 | | | | | | E30 | E30 | | E30 | | E30 | E30 | E30 | | | |
| | JE-H(St)HRH | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | NHXXH E90 = NHXXH-J E90 | E90 | E90 | E90 | E90 | | E90 | E60 | E60 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E30 | E90 |
| | NHXCH E90 | E90 | | E90 | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH E90 | | | E90 | | | | | | | E90 | | | | | | | | | | E90 |
| | (N)HXCH-J SERVO E90 | E60 | | | E60 | | | | | | E60 | E60 | | E60 | | E60 | E60 | E60 | E60 | | E90 |
| | NHXHRHX E90 = NHXHRHX-J E90 | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | | |
| | HDGs E30-E90 | E90 | | E60 | E90 | | | | E90 | E60 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E30 | E90 |
| | HDGs-W E30-E90 | | | E90 | | | | | | E90 | | | | | | | | | | | |
| HDGszo E30-E90 | | | | | | | | | | | | | | | | | | | | | E90 |

| | | | | | | | | | | | | | | | | | | | | | |
|------------|--------------------------------------|-------------|--------------|-----------|--------------|-----------|--------------|-----------|-----------|-----------|--------------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|--------------|-----|
| | HDGszo-W E30-E90 | E60 | | E60 | | | | | | E60 | E60 | | E60 | | E60 | E60 | E60 | | | | |
| | HDGsekw E30-E90 | | E30 | | | | | | E30 | | | | | | | | | | | | |
| | HDGsekwzo E30-E90 | E90 | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | | |
| | HTKSH E30-E90 | E90 | | E90 | E90 | | | E90 | E60 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| | HTKSHekw E30-E90 | E90 | | E90 | E90 | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E90 | E90 | | E90 | | E90 | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | E90 | |
| | FLAME-X 950 NHXCH E90 | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E30 | E90 | | E90 | | | E30 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E30 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E90 | E60 | E60 | E90 | | E60 | | | E60 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E30 | E90 |
| | JE-H(St)H | E90 | E30 | E90 | E90 | | E30 | | | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | | | |
| | FLAME-X 950 HDGs E30-E90 | E90 | | E30 | E90 | | | | | E30 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 HTKSH E90 | E90 | | E60 | E90 | | | | | E60 | E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | | E90 |
| | FLAME-X 950 HTKSHekw E90 | | | | | | | | | | | | | | | | | | | | E90 |
| | HLGsekwf | | | E30 | | | | | | | E30 | | | | | | | | | | |
| VLG | Cable type | 5-12 | 13-22 | 27 | 30-32 | 33 | 36-42 | 43 | 44 | 45 | 51-53 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 | |
| | (N)HXH E90 | | | | | E60 | | | | | | | | | | | | | | | |
| | JE-H(St)H E90 | | | | | E60 | | | | | | | | | | | | | | | |

Annex 2 Table 17. **Group D6** cable classification - Special support structures - **DGOP...H60**

| | | | | | | | | | | | | | | | | | | | |
|----------|-----------------------|-------------|--------------|-----------|--------------|--------------|--------------|-----------|--------------|-----------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|--------------|
| BITNER | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | NHXH E90 = NHXH-J E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | NHXCH E90 | E30 | | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | | |
| | Bitflame 1000 E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | Bitflame 1000 C E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | HDGs E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | HDGsekwf E90 | E30 | | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | | |
| | HTKSHekw E90 | E60 | | | E60 | | | | E60 | | E60 | | E60 | | E60 | E60 | E60 | | |
| DÄTWYLER | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | (N)HXH | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | JE-H(St)H | E60 | | | E60 | | | | E60 | | E60 | | E60 | | E60 | E60 | E60 | | |
| | JE-H(St)HRH | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |

| | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
|--------------------------|--|-------------|--------------|-----------|--------------|--------------|--------------|-----------|--------------|-----------|-----------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|--------------|
| ELKOND | NHXH = NHXH-J (1.5-10mm ²) | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | N2XH P30 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | N2XH P60 | E60 | | | E60 | | | | E60 | | E60 | | E60 | | E60 | E60 | E60 | | |
| | JE-H(st)H P30 | E30 | | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | | |
| | JE-H(st)H P90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | 1-CXKH-V (1.5-10mm ²) | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| EUPEN | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | (N)HXH = (N)HXH-J | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | (N)HXCH | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | JE-H(st)H | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E30 | | E90 | E90 | E30 | | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | | |
| | (N)HXHX | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | NHXCH E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | | E90 |
| | (N)HXCH E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | JE-H(St)H E30 - E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | HDGs E30-E90 | E90 | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | HDGs-W E30-E90 | | | | | E90 | | | | E90 | | | | | | | | | |
| | HDGszo E30-E90 | | | E90 | | | | | E90 | | | | | | | | | | |
| | HDGsekwzo E30-E90 | | | | | | | | | | | | | | | | | | E90 |
| | HTKSH E30-E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw E30-E90 | E90 | | | E90 | | | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| HLGs E30-E90 | E30 | | | E30 | | | | E30 | | E30 | | E30 | | E30 | E30 | E30 | E30 | | |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 27 | 30-32 | 34-35 | 36-42 | 45 | 51-53 | 54 | 55 | 59 | 60-61 | 63 | 64-65 | 67-68 | 73 | 76-78 | 79-82 |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | E90 | E90 | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | FLAME-X 950 NHXCH E90 | | E60 | | | | E60 | | | | | | | | | | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 (N)HXCH E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | |
| | N2XH | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| | JE-H(St)H | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | |
| FLAME-X 950 HTKSH E90 | E90 | | | E90 | | | | E90 | | E90 | | E90 | | E90 | E90 | E90 | E90 | | |
| FLAME-X 950 HTKSHekw E90 | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | | |

Annex 2 Table 18. **Group D7** cable classification - Special support structures - **DFP...H60**

| | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
|--------------|--------------------------------------|-------------|--------------|--------------|--------------|--------------|-----------|--------------|--------------|--------------|-----------|
| BITNER | (N)HXH E90 = (N)HXH-J E90 | E60 | E90 | E60 | E90 | E60 | E60 | E60 | E60 | E60 | E60 |
| | BiTflame 1000 E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 |
| | BiTflame 1000 C E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | BiTservo FS E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSH E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| DÄTV YLER | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | (N)HXCH | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| ERSE | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | (N)HXH | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | JE-H(st)H | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | NHXH E90 = NHXH-J E90 | E90 | E60 | E90 | E60 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E30 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 |
| | NHXCH E90 | | E90 | | E90 | | | | | | |
| | (N)HXCH E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 |
| | (N)HXCH-J SERVO E90 | E30 | E60 | E30 | E60 | E30 | E30 | E30 | E30 | E30 | E30 |
| | HDGs E30-E90 | | E90 | | E90 | | | | | | |
| | HDGszo-W E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HLGs E30-E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | HLGsekw E30-E90 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 |
| TELEFONIKA | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 |
| | FLAME-X 950 (N)HXCH E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 |
| | JE-H(St)H | E30 | E30 | E30 | E30 | E30 | E30 | E30 | E30 | E30 | E30 |
| VLG | Cable type | 5-12 | 13-22 | 30-32 | 36-42 | 51-53 | 55 | 60-61 | 64-65 | 67-68 | 73 |
| | (N)HXH E90 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E30 | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | E90 |
| | JE-H(St)H E90 | E30 | | E30 | | E30 | E30 | E30 | E30 | E30 | E30 |
| | JE-H(St)H E30 | E60 | | E60 | | E60 | E60 | E60 | E60 | E60 | E60 |

Annex 2 Table 19. **Group D8** cable classification - Special support structures - **DUVC...H60**

| TECHNOKABEL | Cable type | | 87 |
|-------------|-------------|--------------------------------------|-----|
| | | (N)HXH E90 = (N)HXH-J E90 | E90 |
| | (N)HXCH E90 | E90 | |
| TELEFONIKA | Cable type | | 87 |
| | | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 |
| | | FLAME-X 950 (N)HXCH E90 | E60 |
| | | FLAME-X 950 HDGs E30-E90 | E90 |
| | | FLAME-X 950 HTKSH E90 | E90 |

Annex 2 Table 20. **Group S1** cable classification - Special support structures - **KGS...H60**

| TECHNOKABEL | Cable type | | 24 |
|-------------|------------|---------------------------|-----|
| | | NHXH E90 = NHXH-J E90 | E90 |
| | | (N)HXH E90 = (N)HXH-J E90 | E30 |
| | | HDGs E30-E90 | E90 |
| | | HTKSH E30-E90 | E90 |
| | | HTKSHekw E30-E90 | E90 |

Annex 2 Table 21. **Group S2** cable classification - Special support structures - **KDS/KDSO...H60, KSG...H60**

| BITNER | Cable type | | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
|--------|---------------------------|-----------------------|-----|------|-------|-----|-----|-----|-----|-----|-------|----|-------|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-------|-----|-------|-----|-------|-----|-----|-----|-----|-----|-------|-----|-------|
| | | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | | | E90 | | E90 | E90 | | | E90 | | | | | | E90 | E90 | E90 | E90 | | E90 | | E90 | | E90 | E90 | | | | | | |
| | (N)HXH E90 = (N)HXH-J E90 | | E90 | E60 | | E90 | E90 | | | E90 | | | E60 | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | | | | | | | E90 | E90 | |
| | NHXCH E90 | | E90 | E90 | | | E90 | | | E90 | | | E90 | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | | | | | | | | | |
| | (N)HXCH E90 | | E90 | | | | E90 | | | E90 | | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | | | | | | | | | |
| | BiTflame 1000 E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | BiTflame 1000 C E90 | | E90 | | E90 | E90 | E90 | | | E90 | | | | | | E90 | E90 | | E90 | E90 | | E90 | | E90 | | E90 | E90 | E90 | | | | | | | E90 | E90 |
| | BiTflame AS(St) E90 | | E90 | | | | E90 | | | E90 | | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | | | | | | | | | |
| | HDGs E90 | E90 | E90 | E30 | E90 | E90 | E90 | | E90 | E90 | E90 | | | E30 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGsekwf E90 | E90 | E90 | | E30 | | E90 | | E90 | E90 | | | | | | E30 | E30 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E30 | E90 | | | |
| | HTKSH E90 | E90 | E90 | E90 | E90 | | E90 | | E90 | E90 | E90 | | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E30 | | | E90 |
| | HTKSHekw E90 | | E90 | | E90 | E90 | E90 | | | E90 | | | | | E30 | E90 | | E90 | E30 | E90 | E90 | E90 | | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E30 | | | E90 | |

| | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
|-------------|--|-----|------|-------|-----|-----|-----|----|-----|-------|-----|-------|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-------|-----|-------|-----|-------|-----|-----|-----|-----|----|-------|----|-------|
| DÄTWYLER | (N)HXH | | E90 | E90 | | | E90 | | | E90 | | | E90 | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | | | |
| | (N)HXCH | | E90 | E90 | | | E90 | | | E90 | | | E90 | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | | | |
| | JE-H(st)H | | E60 | E30 | E60 | | E60 | | | E60 | | | E30 | | E60 | E60 | | E60 | E60 | | E60 | | E60 | E60 | E60 | E60 | | E60 | E60 | | | | | | |
| | JE-H(st)HRH | | E30 | | E60 | | E30 | | | E30 | | | | | E60 | E60 | | E30 | E30 | | E30 | | E30 | | E30 | E60 | E30 | | E30 | E60 | | | | | |
| ELOKND | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | NHXH = NHXH-J (1.5-10mm ²) | | E60 | | E90 | | E60 | | | E60 | | | | | E90 | E90 | | E60 | E60 | | E60 | | E60 | | E60 | E90 | E60 | | E60 | E90 | | | | | |
| | N2XH P30 | | E60 | | E90 | | E60 | | | E60 | | | | | E90 | E90 | | E60 | E60 | | E60 | | E60 | | E60 | E90 | E60 | | E60 | E90 | | | | | |
| | N2XH P60 | | E60 | | E90 | | E60 | | | E60 | | | | | E90 | E90 | | E60 | E60 | | E60 | | E60 | | E60 | E90 | E60 | | E60 | E90 | | | | | |
| | JE-H(st)H P30 | | E30 | | E60 | | E30 | | | E30 | | | | | E60 | E60 | | E30 | E30 | | E30 | | E30 | | E30 | E60 | E30 | | E30 | E60 | | | | | |
| | JE-H(st)H P90 | | E30 | E30 | E90 | | E30 | | | E30 | | | E30 | | E90 | E90 | | E30 | E30 | | E30 | | E30 | | E30 | E90 | E30 | | E30 | E90 | | | | | |
| | 1-CXKH-V (1.5-10mm ²) | E90 | E90 | E90 | E90 | | E90 | | | E90 | E90 | | | E90 | E90 | E90 | | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | | | |
| | SSKFH-V180 | E30 | | | E30 | | | | | E30 | | | | | E30 | E30 | | | | | | | E30 | | | | E30 | | E30 | | E30 | | | | |
| SHXKFH-V180 | E90 | E90 | E90 | | | E90 | | | E90 | E90 | | | E90 | | | | | E90 | | | E90 | E90 | | E90 | | E90 | | E90 | E90 | | | | | | |
| ELPAR | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | NHXH = NHXH-J | | E30 | | | | E30 | | | E30 | | | | | | | | E30 | E30 | | E30 | | E30 | | E30 | | E30 | | E30 | | | | | | |
| | (N)HXH = (N)HXH-J | | E60 | | | | E60 | | | E60 | | | | | | | | E60 | E60 | | E60 | | E60 | | E60 | | E60 | | E60 | | | | | | |
| | NHXCH | | E60 | | | | E60 | | | E60 | | | | | | | | E60 | E60 | | E60 | | E60 | | E60 | | E60 | | E60 | | | | | | |
| | (N)HXCH | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |
| | HDGs | | E30 | | | | E30 | | | E30 | | | | | | | | E30 | E30 | | E30 | | E30 | | E30 | | E30 | | E30 | | | | | | |
| HTKSH | | E30 | | | | E30 | | | E30 | | | | | | | | E30 | E30 | | E30 | | E30 | | E30 | | E30 | | E30 | | | | | | | |
| ERSE | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | (N)HXH = (N)HXH-J | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |
| | (N)HXCH | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |
| JE-H(st)H | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | | |
| KABLOTEK | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | NHXH = NHXH-J | | E60 | | | | E60 | | | E60 | | | | | | | | E60 | E60 | | E60 | | E60 | | E60 | | E60 | | E60 | | | | | | |
| NHXCH | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | | |
| MADEX | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | NHXH - NHXH-J | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |
| | NHXCH | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |
| | HTKSH | | E30 | | E60 | | E30 | | | E30 | | | | | E60 | E60 | | E30 | E30 | | E30 | | E30 | | E30 | | E60 | E30 | | E30 | E60 | | | | |
| HTKSHekw | | | | E30 | | | | | | | | | | E30 | E30 | | | | | | | | | | E30 | | | | | | | | | | |
| NKT | Cable type | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 |
| | NHXH = NHXH-J | | E90 | | | | E90 | | | E90 | | | | | | | | E90 | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | | | | | |

| PRAKAB | Cable type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|-------------------------------------|------|-------|-----|-----|-----|-----|-----|-------|-----|-------|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-------|-----|-------|-----|-------|-----|-----|-----|-----|-----|-------|-----|-------|-----|
| | 1 | 5-12 | 13-22 | 23 | 25 | 26 | 28 | 29 | 30-32 | 33 | 34-35 | 36-42 | 46 | 47 | 48 | 49 | 50 | 51-53 | 54 | 55 | 57 | 60-61 | 62 | 64-65 | 66 | 67-68 | 69 | 71 | 73 | 74 | 75 | 76-78 | 83 | 84-85 | |
| (N)HXH | | E30 | E60 | | | E30 | | | E30 | | | E60 | | | | | E30 | | E30 | | E30 | | E30 | | E30 | | | E30 | | | | | | | |
| SSKFH-V180 | | E60 | E30 | | | E60 | | | E60 | | | E30 | | | | | E60 | | E60 | | E60 | | E60 | | E60 | | | E60 | | | | | | | |
| TECHNOKABEL | Cable type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | | |
| | NHXHX E90 | | E90 | | | E90 | | | E90 | | | | | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | | E90 | | | | | | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E30 | E30 | E90 | E90 | |
| | NHXCH E90 | E30 | E90 | E90 | E90 | E90 | E90 | | E30 | E90 | | | E90 | | E90 | | E90 | | E90 | | E90 | E30 | E90 | | E90 | E90 | E90 | | E30 | E90 | E90 | | | E90 | |
| | (N)HXCH E90 | | E90 | E90 | E90 | E90 | E90 | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | | E90 | E90 | | | E90 | | |
| | (N)HXCH-J SERVO E90 | E90 | E60 | E60 | E90 | | E60 | | E90 | E60 | | E90 | E60 | | E90 | | E90 | | E60 | E90 | E60 | E90 | E60 | | E60 | E90 | E60 | | E90 | E60 | E90 | | | | |
| | JE-H(St)H E30 - E90 | | | | E60 | | | | | | | | | | E60 | E60 | | | | | | | | | | E60 | | | | | | E60 | | | |
| | HdGs E30-E90 | E90 | E90 | E30 | E90 | | E90 | E90 | E90 | E90 | | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HdGs-W E30-E90 | E90 | E90 | | E90 | | E90 | | E90 | E90 | | E90 | | | E90 | | E90 | | E90 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | | E90 | | E90 |
| | HdGszo-W E30-E90 | | E60 | | | | E60 | | | E60 | | | | | | | | E60 | | E60 | | E60 | | E60 | | E60 | | E60 | | | | | E60 | | |
| | HdGsekw E30-E90 | | | E30 | E90 | | | | | | | E90 | E30 | | E90 | | E90 | | | | E90 | | | | | E90 | | | | | | E90 | | | E90 |
| | HdGsekw-W | E90 | | | | E90 | | | E90 | | | | | | | | | | | | | E90 | | | | | | | | E90 | | | | | E90 |
| | HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E60 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| HTKSHekw E30-E90 | | E90 | | E60 | E90 | E90 | | | E90 | | E90 | | E90 | E60 | | E60 | E90 | E90 | E90 | E90 | | E90 | E90 | E90 | E60 | E90 | E90 | | E90 | E60 | E90 | | E90 | E90 | |
| HLGs-W | E30 | | | | E90 | | | E30 | | | | | | | | | | | | | E30 | | | | | | | E30 | | | | | | E90 | |
| TELEFONIKA | Cable type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | FLAME-X 950 NHXH E90= NHXH-J E90 | | E90 | | | E90 | E90 | | | E90 | | | | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | | E90 | | | E60 | E90 | | |
| | FLAME-X 950 NHXCH E90 | | E90 | | | E90 | | | E90 | | | | | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | | E90 | | | | | | |
| | FLAME-X 950 (N)HXH E90=(N)HXH-J E90 | | E90 | E90 | E90 | E90 | E90 | | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | | E90 | E90 | | E90 | E90 | E90 | |
| | FLAME-X 950 (N)HXCH E90 | E60 | E90 | E30 | | E90 | E90 | | E60 | E90 | | | E30 | | | | | E90 | | E90 | E60 | E90 | | E90 | | E90 | | E60 | E90 | | | E90 | E90 | | |
| | JE-H(St)H | E60 | E90 | | | E90 | | E60 | E90 | | | | | | | | | E90 | | E90 | E60 | E90 | | E90 | | E90 | | E60 | E90 | | | E90 | | | |
| | FLAME-X 950 HdGs E30-E90 | E60 | E90 | | E90 | E90 | E90 | | E60 | E90 | | | | E90 | | E90 | | E90 | | E90 | E60 | E90 | | E90 | E90 | E90 | | E60 | E90 | E90 | | E90 | E90 | E90 | |
| | FLAME-X 950 HTKSH E90 | | E90 | | E90 | E90 | E90 | | | E90 | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | E90 | E90 | E90 | | | E90 | E90 | | E60 | E90 | E90 |
| FLAME-X 950 HTKSHekw E90 | | | | | E30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | E30 | | |
| VLG | Cable type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (N)HXH E90 | | E90 | | | E90 | | | E90 | | | | | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | | E90 | | | | | | |
| | (N)HXH E30 | | E60 | | | E60 | | | E60 | | | | | | | | | E60 | | E60 | | E60 | | E60 | | E60 | | | E60 | | | | | | |
| | JE-H(St)H E90 | | E90 | | | E90 | | | E90 | | | | | | | | | E90 | | E90 | | E90 | | E90 | | E90 | | | E90 | | | | | | |
| JE-H(St)H E30 | | E60 | | | E60 | | | E60 | | | | | | | | | E60 | | E60 | | E60 | | E60 | | E60 | | | E60 | | | | | | | |

Annex 2 Table 22. **Group S3** cable classification - Special support structures - **KDSZ.H60**

| | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 |
|---------------|---------------------------|-------------|--------------|-----------|-----------|--------------|--------------|-----------|--------------|-----------|--------------|--------------|-----------|--------------|-----------|-----------|
| BITNER | (N)HXH E90 = (N)HXH-J E90 | E30 | | E90 | E30 | E30 | | E90 | E30 | E30 | E30 | E30 | E90 | E30 | E30 | E90 |
| | (N)HXCH E90 | E60 | | | E60 | E60 | | | E60 | E60 | E60 | E60 | | E60 | E60 | |
| | BiTflame 1000 E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | BiTflame 1000 C E90 | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| | BiTservo FS E90 | E30 | | | E30 | E30 | | | E30 | E30 | E30 | E30 | | E30 | E30 | |
| | HDGs E90 | E30 | | E90 | E30 | E30 | | E90 | E30 | E30 | E30 | E30 | E90 | E30 | E30 | E90 |
| | HDGsekwf E90 | | | E90 | | | | E90 | | | | | E90 | | | E90 |
| | HTKSH E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HLGs(zo) | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| DÄTWYLER | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 |
| | (N)HXH | E30 | | | E30 | E30 | | | E30 | E30 | E30 | E30 | | E30 | E30 | |
| | (N)HXCH | E60 | | | E60 | E60 | | | E60 | E60 | E60 | E60 | | E60 | E60 | |
| ELKOND | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 |
| | NHXH = NHXH-J | | E90 | | | | E90 | | | | | | | | | |
| | 1-CXKH-V | | E90 | | | | E90 | | | | | | | | | |
| | SSKFH-V180 P60 | | E30 | | | | E30 | | | | | | | | | |
| | SHKFH-V180 | | E90 | | | | E90 | | | | | | | | | |
| ERSE | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 |
| | (N)HXH = (N)HXH-J | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| | (N)HXCH | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| | JE-H(st)H | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| TECHNOKABEL | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 |
| | NHXH E90 = NHXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | (N)HXCH E90 | E30 | | | E30 | E30 | | | E30 | E30 | E30 | E30 | | E30 | E30 | |
| | (N)HXCH-J SERVO E90 | E30 | | E90 | E30 | E30 | | E90 | E30 | E30 | E30 | E30 | E90 | E30 | E30 | E90 |
| | JE-H(St)H E30 - E90 | | E90 | | | | E90 | | | | | | | | | |
| | HDGs E30-E90 | E90 | E30 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGs-W E30-E90 | E90 | | E90 | E90 | E90 | | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | HDGszo-W E30-E90 | E90 | | | E90 | E90 | | | E90 | E90 | E90 | E90 | | E90 | E90 | |
| | HDGsekw-W | | | E60 | | | | E60 | | | | | E60 | | | E60 |
| HTKSH E30-E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | |
| | HTKSHekw E30-E90 | | E90 | E90 | | | E90 | E90 | | | | | E90 | | | E90 |

| TELEFONIKA | Cable type | 5-12 | 13-22 | 23 | 26 | 30-32 | 36-42 | 47 | 51-53 | 55 | 60-61 | 64-65 | 66 | 67-68 | 73 | 74 | |
|------------|--------------------------------------|------|-------|-----|-----|-------|-------|-----|-------|-----|-------|-------|-----|-------|-----|-----|-----|
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E60 | E90 | | E60 | E60 | E90 | | | E60 | E60 | E60 | E60 | | E60 | E60 | |
| | FLAME-X 950 (N)HXCH E90 | E60 | E30 | E60 | E60 | E60 | E30 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 | E60 |
| | JE-H(St)H | E90 | E30 | | E90 | E90 | E30 | | | E90 | E90 | E90 | | | E90 | E90 | |
| | FLAME-X 950 HDGs E30-E90 | E90 | E30 | E90 | E90 | E90 | E30 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 | E90 |
| | FLAME-X 950 HTKSH E90 | E90 | | E30 | E90 | E90 | | E30 | E90 | E90 | E90 | E90 | E90 | E30 | E90 | E90 | E30 |
| | FLAME-X 950 HTKSHekw E90 | E30 | | | E30 | E30 | | | E30 | E30 | E30 | E30 | | | E30 | E30 | |

Annex 2 Table 23. **Group U** cable classification - Special fixture for cable **clamps and brackets**

| BITNER | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
|--------|---------------------------|-----|----|-----|-----|----|-----|----|-----|----|
| | NHXH E90 = NHXH-J E90 | E90 | | E90 | E90 | | E90 | | | |
| | (N)HXH E90 = (N)HXH-J E90 | | | E90 | | | | | E60 | |
| | NHXCH E90 | E90 | | E90 | E90 | | E90 | | | |
| | (N)HXCH E90 | | | E90 | | | | | | |
| | BiTflame 1000 E90 | E90 | | E90 | E90 | | E90 | | | |
| | BiTflame 1000 C E90 | E90 | | E90 | E60 | | E90 | | | |
| | BiTflame S E90 | | | | E90 | | | | | |
| | BiTflame S(St) E90 | | | | E90 | | | | | |
| | BiTflame S-M E90 | | | | E90 | | | | | |
| | BiTflame S-M(St) E90 | | | | E90 | | | | | |
| | BiTflame AS E90 | | | | | | E90 | | | |
| | BiTservo FS E90 | E90 | | E60 | | | | | | |
| | HDGs E90 | E90 | | E90 | E90 | | E90 | | E30 | |
| | HDGsekwf E90 | | | E90 | E90 | | E30 | | | |
| | HTKSH E90 | | | E90 | E90 | | E90 | | | |
| | HTKSHekw E90 | E90 | | E90 | | | E90 | | | |

| DÄTWYLER | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
|----------|------------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| | (N)HXH | E60 | E90 | E60 | E30 | E90 | E90 | E30 | E60 | |
| | (N)HXCH | E60 | E60 | | E90 | E60 | E90 | E30 | E60 | |
| | JE-H(St)H | E30 | E30 | | E30 | E30 | | E30 | | |

| | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
|----------|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ELKOND | NHXXH = NHXXH-J (1.5-10mm2) | | | E90 | | | | | | |
| | N2XH P30 | | | E60 | | | | | | |
| | N2XH P60 | | | E60 | | | | | | |
| | JE-H(st)H P30 | | | E30 | | | | | | |
| | JE-H(st)H P90 | | | E90 | | | | | | |
| | 1-CXKH-V (1.5-10mm2) | | | E90 | | | E90 | | | |
| | SHXKFH-V180 | | | E90 | | | E90 | | | |
| | | | | | | | | | | |
| ELPAR | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | NHXXH = NHXXH-J | E90 | | E60 | | | | | | |
| | (N)HXXH = (N)HXXH-J | E60 | | E90 | | | | | | |
| | NHXCH | E90 | | E90 | | | | | | |
| | (N)HXCH | E30 | | E90 | | | | | | |
| | HDGs | E60 | | E90 | | | | | | |
| | HTKSH | E90 | | E60 | | | | | | |
| | | | | | | | | | | |
| EUPEN | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | (N)HXXH = (N)HXXH-J | E90 | E90 | | | E90 | | E60 | | |
| | (N)HXCH | E90 | E60 | | | E90 | | E90 | | |
| | JE-H(st)H | E90 | E90 | | | E90 | | E60 | | |
| | | | | | | | | | | |
| ERSE | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | NHXXH = NHXXH-J | | | | | E90 | | E90 | | |
| | (N)HXXH = (N)HXXH-J | E90 | E90 | | | E90 | E90 | E90 | | |
| | NHXCH | | | | | E90 | | | | |
| | (N)HXCH | E90 | E90 | | | E90 | E90 | E90 | | |
| | JE-H(st)H | E90 | E90 | | | E90 | E90 | E90 | | |
| | | | | | | | | | | |
| KABLOTEK | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | NHXXH = NHXXH-J | E90 | | | E90 | | | | | |
| | NHXCH | E90 | | | E90 | | | | | |
| | JE-H(St)H | E90 | | | E90 | | | | | |
| | | | | | | | | | | |
| MADEX | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | NHXXH - NHXXH-J | E60 | | E90 | | | | | | |
| | NHXCH | | | E90 | | | | | | |
| | HTKSH | E90 | | E90 | | | | | | |
| | HTKSHekw | | | E90 | | | | | | |

| NKT | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
|-----------------|--------------------------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | NHXXH = NHXXH-J | E90 | | E90 | E90 | | E90 | | |
| PRAKAB | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | (N)HXH | | | E90 | | | E30 | | | |
| | SSKFH-V180 | | | E90 | | | E90 | | | |
| STUDER | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | (N)HXH = (N)HXH-J | E90 | | | | | | | | |
| | (N)HXCH | E90 | | | | | E90 | | | |
| | (N)HXCH E30 | E30 | | | | | E60 | | | |
| | JE-H(St)H | | | | | | E60 | | | |
| | JE-H(St)HRH | | | | | | E30 | | | |
| TECHNOKABEL | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | NHXXH E90 = NHXXH-J E90 | E90 | | E90 | E90 | | E90 | | E90 | |
| | (N)HXH E90 = (N)HXH-J E90 | E90 | | E90 | E90 | | E90 | | E90 | E90 |
| | NHXCH E90 | E90 | | E90 | | | E90 | | E90 | |
| | (N)HXCH E90 | E90 | | E90 | | | | | E90 | |
| | (N)HXCH-J SERVO E90 | | | E90 | E90 | | E90 | | | |
| | NHXHRHX E90 = NHXHRHX-J E90 | | | E90 | | | | | | |
| | JE-H(St)H E30-E90 | E90 | | E90 | | | E90 | | | |
| | HDGs E30-E90 | | | E90 | E90 | | E90 | | E90 | E90 |
| | HDGs-W E30-E90 | | | E90 | | | E90 | | | |
| | HDGszo E30-E90 | E90 | | E90 | | | | | | |
| | HDGszo-W E30-E90 | | | E90 | | | E90 | | | |
| | HDGsekwzo E30-E90 | E90 | | E90 | | | | | | |
| | HTKSH E30-E90 | E90 | | E90 | E90 | | E90 | | E90 | E90 |
| | HTKSHekw E30-E90 | | | E90 | E90 | | E90 | | E90 | |
| HLGs E30-E90 | E90 | | E90 | | | | | | | |
| HLGszo E30-E90 | | | E90 | | | | | | | |
| HLGsekw E30-E90 | E90 | | E90 | | | E90 | | | | |
| TELEFONIKA | Cable type | U1 | U2 | U3 | U4 | U5 | U6 | U7 | U8 | U9 |
| | FLAME-X 950 NHXXH E90= NHXXH-J E90 | E90 | | E90 | E90 | | E90 | | | |
| | FLAME-X 950 NHXCH E90 | E90 | | E90 | E60 | | E60 | | | |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 | E90 | E90 | E90 | E60 | E90 | E30 | R90 | |
| | FLAME-X 950 (N)HXCH E90 | E90 | E60 | E90 | E90 | E90 | E90 | E90 | | |
| | JE-H(St)H | E90 | E90 | E90 | E90 | E90 | E90 | E30 | R60 | |

| | | | | | | | | | |
|--------------------------|-----|--|-----|-----|--|-----|--|-----|--|
| FLAME-X 950 HDGs E30-E90 | E90 | | E90 | E90 | | E90 | | R90 | |
| FLAME-X 950 HTKSH E90 | E90 | | E90 | E90 | | E90 | | | |
| FLAME-X 950 HTKSHekw E90 | E60 | | E90 | E90 | | E90 | | | |
| HLGsekwf | | | | | | E30 | | | |

Annex 2 Table 24. **Group N** cable classification - Special support structures - **KS...H68**

| | | |
|-------------|--------------------------------------|----------|
| BITNER | Cable type | N |
| | (N)HXH E90 = (N)HXH-J E90 | E90 |
| | BiTflame S E90 | E90 |
| | BiTflame AS E90 | E90 |
| | HDGs E90 | E90 |
| | HTKSH E90 | E90 |
| TECHNOKABEL | Cable type | N |
| | NHXH E90 = NHXH-J E90 | E90 |
| | HDGs E30-E90 | E90 |
| | HTKSH E30-E90 | E90 |
| | HTKSHekw E30-E90 | E90 |
| TELEFONIKA | Cable type | N |
| | FLAME-X 950 (N)HXH E90= (N)HXH-J E90 | E90 |
| | FLAME-X 950 (N)HXCH E90 | E60 |
| | JE-H(St)H | E60 |
| | FLAME-X 950 HTKSH E90 | E90 |
| | HLGsekwf | E60 |

Annex 3 Special support structures - 120 min, fibre optic cables

Since the DIN 4102- 4102: 1998 standard does not provide for an E120 classification, the 1- 19 gives the result of the test in the form of the achieved time for circuit integrity maintenance under fire conditions.

Annex 3 Table 1

| KCP/KCOP...H60 | | | | | | | | |
|--------------------|-------------------------------|-------------|------------------|---------------------|---------------------------|-----------------------|-----------------------|----------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number | |
| TECHNOKABEL | 36 | 100-400 | 10 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | NHXCH E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | 5 | 100-400 | 10 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | (N)HXCH E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | (N)HXHX | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | 9 | 100-400 | 10 kg/m | 1.5 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-400 | 10 kg/m | 1.5 m | HLGs E30-E90 | 120 min | FIRES-JR-028-18-NURE | |
| | | 100-600 | 25 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-047-16-NURE | |
| | | 100-600 | 25 kg/m | 1.5 m | (N)HXCH E90 | 120 min | FIRES-JR-047-16-NURE | |
| | 30 | 100-300 | 10 kg/m | 1.2 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-18-NURE | |
| | | 100-300 | 10 kg/m | 1.2 m | Je-H(St)H | 120 min | FIRES-JR-119-18-NURE | |
| | 7 | 100-300 | 10 kg/m | 1.2 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-18-NURE | |
| | PRAKAB | 7 | 100-300 | 10 kg/m | 1.2 m | PRAFlaDur 1-CSKH-V180 | 120 min | FIRES-JR-085-15-NURS |
| | BITNER | 11 | 100-300 | 10 kg/m | 1.2 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |

Annex 3 Table 2

| KFL...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|---------------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 20 | 100-300 | 10 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-047-16-NURE |
| | 71 | 50 | 5 kg/m | 1.5 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-047-16-NURE |
| | 1 | 50 | 2 kg/m | 1.5 m | NHXHX E90 | 120 min | FIRES-JR-088-18-NURE |
| | 30 | 100-300 | 20 kg/m | 1.5 m | HLGs E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| BITNER | 9 | 100-300 | 20 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-039-22-NURE |
| | 61 | 100-300 | 10 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-039-22-NURE |
| | 38 | 100-300 | 10 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-039-22-NURE |
| | | 100-300 | 10 kg/m | 1.5 m | HDGs E90 | 120 min | FIRES-JR-039-22-NURE |

Annex 3 Table 3

| KLFL...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-----------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 2 | 75 | 5 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 75 | 5 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 75 | 5 kg/m | 1.5 m | HDGs E30-E90 | 120 min | FIRES-JR-088-18-NURE |

Annex 3 Table 4

| KGL/KGOL...H60, KCL/KCLO...H60 | | | | | | | |
|---------------------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|--------------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TELEFONIKA | 34 | 100-300 | 20 kg/m | 1.5 m | FLAME-X 950 HDGs E30-E90 | 120 min | FIRES-JR-074-18-NURE |
| BITNER | 56 | 50 | 5 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-039-22-NURE |
| | 3 | 50 | 5 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-039-22-NURE |
| | | 50 | 5 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-039-22-NURE |
| | | 50 | 5 kg/m | 1.5 m | HDGs E90 | 120 min | FIRES-JR-039-22-NURE |

Annex 3 Table 5

| KFJ...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 9 | 100-400 | 20 kg/m | 1.5 m | JE-H(St)H E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HLGs E30-E90 | 120 min | FIRES-JR-119-18-NURE |

Annex 3 Table 6

| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-----------------------|-------------|------------------------------|
| TECHNOKABEL | 86 | 100-400 | 20 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HDGs-W E30-E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-119-18-NURE |
| BITNER | 1 | 100-150 | 7 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-123-22-NURE |

Annex 3 Table 7

| KBJ...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-----------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 9 | 100-400 | 20 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| BITNER | | 100-400 | 10 kg/m | 1.5 m | BiTflame 1000 E90 | 120 min | FIRES-JR-039-22-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | BiTflame S-M E90 | 120 min | FIRES-JR-123-22-NURE |

Annex 3 Table 8

| DUJ...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|----------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| BITNER | 9 | 100-400 | 10 kg/m | 1.5 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-400 | 10 kg/m | 1.5 m | BiTflame S-M(St) E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-400 | 10 kg/m | 1.5 m | BiTflame S-M E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-400 | 10 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-400 | 10 kg/m | 1.5 m | BiTflame AS E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-400 | 10 kg/m | 1.5 m | BiTflame AS(St) E90 | 120 min | FIRES-JR-126-22-NURE2 |

Annex 3 Table 9

| DGOD...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-----------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TELEFONIKA | 34 | 100-400 | 20 kg/m | 1.5 m | FLAME-X 950 NHXCH E90 | 120 min | FIRES-JR-074-18-NURE |

Annex 3 Table 10

| DUD...HJ60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 9 | 100-400 | 25 kg/m | 1.5 m | (N)HXCH E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 25 kg/m | 1.5 m | HDGs-W E30-E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 25 kg/m | 1.5 m | HLGs-W | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 25 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-119-18-NURE |

Annex 3 Table 11

| DGOP...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|---------------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 36 | 100-400 | 20 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | NHXCH E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | 4 | 100-400 | 20 kg/m | 1.5 m | (N)HXHX | 120 min | FIRES-JR-028-18-NURE |
| | 6 | 100-400 | 20 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | 31 | 100-400 | 20 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | (N)HXCH E90 | 120 min | FIRES-JR-119-18-NURE |
| | 7 | 100-400 | 20 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | (N)HXCH E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | JE-H(St)H E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 100-400 | 20 kg/m | 1.2 m | HTKSH E30-E90 | 120 min | FIRES-JR-119-18-NURE |
| PRAKAB | 7 | 100-400 | 20 kg/m | 1.2 m | PRAFlaDur 1-CSKH-V180 | 120 min | FIRES-JR-085-15-NURS |

Annex 3 Table 12

| DUP/DUOP...H60, DUP...H60 | | | | | | | |
|----------------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|----------------------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TELEFONIKA | 30 | 100-600 | 30 kg/m | 1.5 m | FLAME-X 950 NHXH E90= NHXH-J E90 | 120 min | FIRES-JR-074-18-NURE |
| | 9 | 100-600 | 30 kg/m | 1.5 m | FLAME-X 950 NHXH E90= NHXH-J E90 | 120 min | FIRES-JR-074-18-NURE |

Annex 3 Table 13

| DFP...H60 | | | | | | | |
|---------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|-------------------|-------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 31 | 100-400 | 20 kg/m | 1.5 m | HLGs E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-088-18-NURE |

Annex 3 Table 14

| KDS/KDSO...H60, KSG...H60 | | | | | | | |
|----------------------------------|--------------------------------------|--------------------|-------------------------|----------------------------|---------------------------|----------------------|------------------------------|
| Cable manufacturer | Structure number from Annex 2 | width range | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | 5 | 100-400 | 20 kg/m | 1.5 m | NHXCH E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | (N)HXCH E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 100-400 | 20 kg/m | 1.5 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | 28 | 100-300 | 10 kg/m | 1.2 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-300 | 10 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-300 | 10 kg/m | 1.2 m | HTKSH E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-300 | 10 kg/m | 1.2 m | HDGs E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | 29 | 200-600 | 20 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 200-600 | 20 kg/m | 1.2 m | HDGs-W E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 200-600 | 20 kg/m | 1.2 m | HTKSH E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | 83 | 100-600 | 20 kg/m | 1.5 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | NHXCH E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | (N)HXCH E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | HLGs-W | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | HTKSH E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 100-600 | 20 kg/m | 1.5 m | HTKSHekw E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| 25 | 100 | 3 kg/m | 1.2 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE | |
| BITNER | 49 | 60 | 2 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 60 | 2 kg/m | 1.5 m | HTKSHekw E90 | 120 min | FIRES-JR-123-22-NURE |
| | 50 | 100 | 5 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100 | 5 kg/m | 1.5 m | HTKSHekw E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 200-300 | 10 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 200-300 | 10 kg/m | 1.5 m | HTKSHekw E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 400-600 | 15 kg/m | 1.5 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |

| | | | | | | | |
|--|----|---------|---------|-------|--------------|---------|-----------------------|
| | 46 | 400-600 | 15 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-600 | 15 kg/m | 1.5 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-600 | 15 kg/m | 1.5 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-600 | 15 kg/m | 1.5 m | HTKSHekw E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | 69 | 100-400 | 10 kg/m | 1.2 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-400 | 10 kg/m | 1.2 m | HDGsekwf E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 100-400 | 10 kg/m | 1.2 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-400 | 10 kg/m | 1.2 m | HTKSHekw E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | 75 | 100-400 | 10 kg/m | 1.2 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 100-400 | 10 kg/m | 1.2 m | HTKSHekw E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | 62 | 100-400 | 10 kg/m | 1.2 m | HTKSH E90 | 120 min | FIRES-JR-126-22-NURE2 |

Annex 3 Table 15

| UDF | | | | | |
|--------------------|-------------------------------|---------------------|---------------------------|---------|-----------------------|
| Cable manufacturer | Group from Annex 1 or Annex 2 | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | U3 | 0.6 m | HLGs E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 0.6 m | HDGszo E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 0.6 m | HTKSHekw E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 0.6 m | HTKSH E30-E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 0.6 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 0.6 m | HDGs-W E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | | 0.6 m | HLGs E30-E90 | 120 min | FIRES-JR-088-18-NURE |
| | B2 | 0.3 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 0.3 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| | | 0.3 m | JE-H(St)H E90 | 120 min | FIRES-JR-119-18-NURE |
| | U3 | 0.6 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-18-NURE |
| TELEFONIKA | B2 | 0.3 m | FLAME-X 950 HDGs E30-E90 | 120 min | FIRES-JR-074-18-NURE |

| | | | | | |
|--------|----|-------|-----------------------|---------|-----------------------|
| | | 0.3 m | FLAME-X 950 HTKSH E90 | 120 min | FIRES-JR-074-18-NURE |
| BITNER | B2 | 0.3 m | BiTflame AS E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 0.3 m | BiTflame AS(St) E90 | 120 min | FIRES-JR-126-22-NURE2 |

Annex 3 Table 16

| Rung + cable clamp | | | | | |
|--------------------|-------------------------------|---------------------|---------------------------|---------|-----------------------|
| Cable manufacturer | Group from Annex 1 or Annex 2 | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | U1 | 0.6 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-028-18-NURE |
| | | 0.6 m | (N)HXCH E90 | 120 min | FIRES-JR-028-18-NURE |
| | B1 | 0.3 m | NHXH E90 = NHXH-J E90 | 120 min | FIRES-JR-119-19-NURE |
| | | 0.3 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-119-19-NURE |
| | | 0.3 m | JE-H(St)H E90 | 120 min | FIRES-JR-119-19-NURE |

Annex 3 Table 17

| KSA | | | | | |
|--------------------|-------------------------------|---------------------|-----------------------|---------|-----------------------|
| Cable manufacturer | Group from Annex 1 or Annex 2 | Max support spacing | Cable type | time | classification number |
| PRAKAB | B3 | 0.3 m | PRAFlaDur 1-CSKH-V180 | 120 min | FIRES-JR-085-15-NURS |
| BITNER | U4 | 0.6 m | HDGs E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 0.6 m | HDGsekwf E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 0.6 m | BiTflame S E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 0.6 m | BiTflame S-M E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 0.6 m | BiTflame S-M(St) E90 | 120 min | FIRES-JR-123-22-NURE |
| | B3 | 0.3 m | BiTflame S-M(St) E90 | 120 min | FIRES-JR-123-22-NURE |
| | | 0.3 m | BiTflame AS E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 0.3 m | BiTflame AS(St) E90 | 120 min | FIRES-JR-126-22-NURE2 |

Annex 3 Table 18

| OZ/OZO | | | | | | |
|---------------------------|--------------------------------------|-------------------------|----------------------------|---------------------|-------------|------------------------------|
| Cable manufacturer | Group from Annex 1 or Annex 2 | permissible load | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | U6 | 6 kg/m | 0.6 m | HDGszo E30-E90 | 120 min | FIRES-JR-047-16-NURE |
| BITNER | B4 | 6 kg/m | 0.3 m | BiTflame AS E90 | 120 min | FIRES-JR-126-22-NURE2 |
| | | 6 kg/m | 0.3 m | BiTflame AS(St) E90 | 120 min | FIRES-JR-126-22-NURE2 |

Annex 3 Table 19

| ZSK1 | | | | | |
|---------------------------|--------------------------------------|----------------------------|---------------------------|-------------|------------------------------|
| Cable manufacturer | Group from Annex 1 or Annex 2 | Max support spacing | Cable type | time | classification number |
| TECHNOKABEL | U9 | 0.6 m | (N)HXH E90 = (N)HXH-J E90 | 120 min | FIRES-JR-047-16-NURE |

Since the DIN 4102-12:1998 standard does not provide for the E classification for fibre optic cables, Tables 20-21 present the time taken to maintain adequate functionality, i.e. a maximum change in attenuation of $\leq 1\text{dB/m}$ for single-mode fibre optics and $\leq 2\text{dB/m}$ for multimode fibre optics (in accordance with PN-EN 50582:2016-12)

Annex 3 Table 20


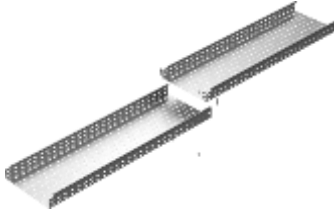

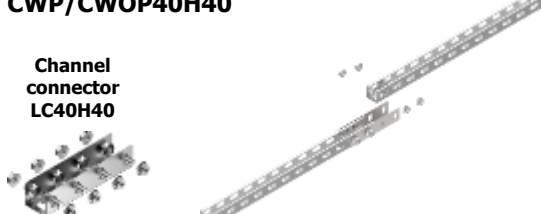
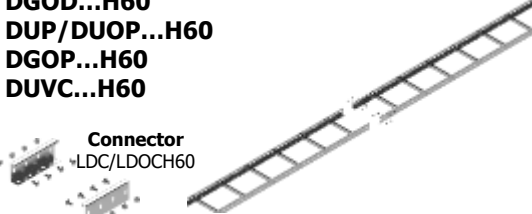
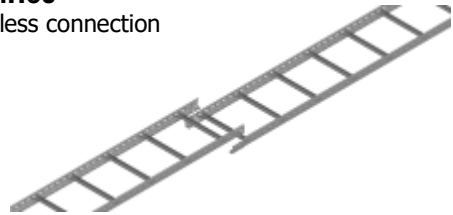
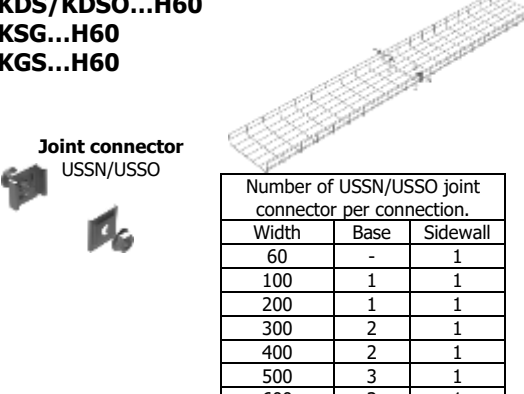
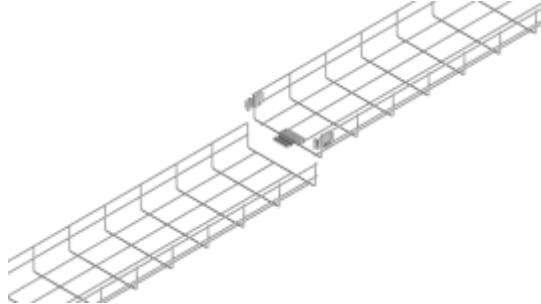
| Manufacturer | Fibre optic type | Group and structure number from Annex 2 | time | report |
|--------------|---|---|--------|---------------|
| TECHNOKABEL | Technoflame FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 | S2 - 23 | 30 min | 12400010-2 |
| | Technoflame FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 | K4 - 3 | 30 min | FOC-2-09/2020 |
| BITNER | BiTfiber Flame CLT 12 SMF G652D | S2 - 66 | 30 min | 1614/BW/21 |

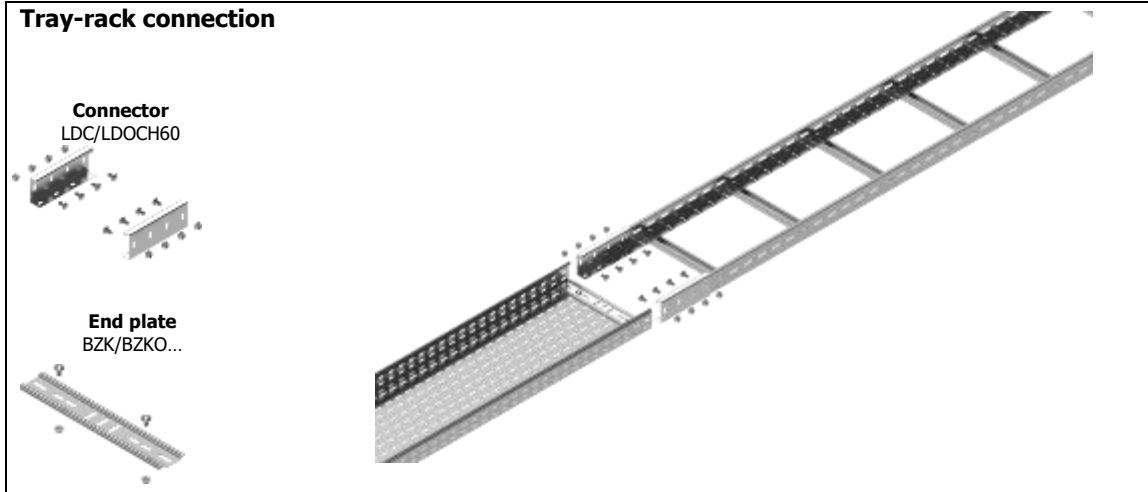
Annex 3 Table 21

| Manufacturer | Fibre optic type | Group from Annex 1 or Annex 2 | time | report |
|--------------|---|-------------------------------|--------|------------|
| TECHNOKABEL | Technoflame FOC-2-SLT-HFFR PH120/E30 9/125 SM | U3 | 30 min | 901/BW/21 |
| | Technoflame FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 | U6 | 30 min | 12400010-2 |
| | Technoflame FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 | U4 | 30 min | 12400010-2 |
| | Technoflame FOC-2-SLT-HFFR PH120/E30-E60 50/125 OM2 | B2 | 60 min | 12400010-2 |
| BITNER | BiTfiber Flame CLT 12 SMF G652D | B2 | 60 min | 1614/BW/21 |

Annex 4

Connection of cable trays and racks, channels and wire mesh trays

| <p>KCP/KCOP...H60</p>  <p>Connector LPP/LPOPH60 or LPLPH60 LPU2H60</p> <p>Connection plate BL/BLO...</p> <table border="1"> <thead> <tr> <th colspan="3">Number of SGK6x... bolts per connection.</th> </tr> <tr> <th>Width</th> <th>Connection plate</th> <th>Connector</th> </tr> </thead> <tbody> <tr><td>100</td><td>4</td><td>4</td></tr> <tr><td>150</td><td>4</td><td>4</td></tr> <tr><td>200</td><td>4</td><td>4</td></tr> <tr><td>300</td><td>8</td><td>4</td></tr> <tr><td>400</td><td>8</td><td>4</td></tr> <tr><td>500</td><td>8</td><td>4</td></tr> <tr><td>600</td><td>8</td><td>4</td></tr> </tbody> </table> | Number of SGK6x... bolts per connection. | | | Width | Connection plate | Connector | 100 | 4 | 4 | 150 | 4 | 4 | 200 | 4 | 4 | 300 | 8 | 4 | 400 | 8 | 4 | 500 | 8 | 4 | 600 | 8 | 4 | <p>KGL100H42 KGL/KGOL...H60 KCL100H42 KCL/KCOL...H60 KBL...H60 KGJ/KGOJ...H60 KCJ/KCOJ...H60 KBJ...H60 KCD/KCOD...H60</p>  <table border="1"> <thead> <tr> <th colspan="3">Number of SGK6x... bolts per connection.</th> </tr> <tr> <th>Width</th> <th>base</th> <th>sidewall</th> </tr> </thead> <tbody> <tr><td>50</td><td></td><td>2</td></tr> <tr><td>100</td><td>2</td><td>2</td></tr> <tr><td>150</td><td>2</td><td>2</td></tr> <tr><td>200</td><td>2</td><td>2</td></tr> <tr><td>300</td><td>2</td><td>2</td></tr> <tr><td>400</td><td>4</td><td>2</td></tr> </tbody> </table> | Number of SGK6x... bolts per connection. | | | Width | base | sidewall | 50 | | 2 | 100 | 2 | 2 | 150 | 2 | 2 | 200 | 2 | 2 | 300 | 2 | 2 | 400 | 4 | 2 |
|--|---|-----------|--|-------|------------------|-----------|-----|---|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|---|--|--|--|-------|------|----------|----|--|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|-----|---|---|
| Number of SGK6x... bolts per connection. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width | Connection plate | Connector | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 4 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 400 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 600 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of SGK6x... bolts per connection. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width | base | sidewall | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 400 | 4 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>KFL...H60 KFJ...H60 Screwless connection</p>  | <p>CWP/CWOP40H40</p> <p>Channel connector LC40H40</p>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>DUD...H45 DUJ...H60 DUD...H60 DGOD...H60 DUP/DUOP...H60 DGOP...H60 DUVC...H60</p> <p>Connector LDC/LDOCH60</p>  | <p>DFP...H60 Screwless connection</p>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>KDS/KDSO...H60 KSG...H60 KGS...H60</p> <p>Joint connector USSN/USSO</p> <table border="1"> <thead> <tr> <th colspan="3">Number of USSN/USSO joint connector per connection.</th> </tr> <tr> <th>Width</th> <th>Base</th> <th>Sidewall</th> </tr> </thead> <tbody> <tr><td>60</td><td>-</td><td>1</td></tr> <tr><td>100</td><td>1</td><td>1</td></tr> <tr><td>200</td><td>1</td><td>1</td></tr> <tr><td>300</td><td>2</td><td>1</td></tr> <tr><td>400</td><td>2</td><td>1</td></tr> <tr><td>500</td><td>3</td><td>1</td></tr> <tr><td>600</td><td>3</td><td>1</td></tr> </tbody> </table>  | Number of USSN/USSO joint connector per connection. | | | Width | Base | Sidewall | 60 | - | 1 | 100 | 1 | 1 | 200 | 1 | 1 | 300 | 2 | 1 | 400 | 2 | 1 | 500 | 3 | 1 | 600 | 3 | 1 | <p>KDSZ...H60 Screwless connection</p>  | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of USSN/USSO joint connector per connection. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width | Base | Sidewall | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | - | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 400 | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 600 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



CONNECTION OF TRAYS/RACKS/MESH TO SUPPORT STRUCTURE

| Details of trays / racks / wire mesh trays connection to the support structure | |
|---|--|
| <p>Trays</p> <p>SGKM6x12</p> <p>If necessary, use PW6 enlarged washers</p> | <p>Racks</p> <p>ZM/ZMO SGKM8x14</p> <p>If necessary, use PW8 enlarged washers</p> |
| <p>Mesh trays 100- 600</p> <p>ZS/ZSO</p> <p>If necessary, use PW6 enlarged washers</p> | <p>Mesh trays 60H60</p> <p>SGKM6x12 USK</p> <p>If necessary, use PW6 enlarged washers</p> |

END OF THE NATIONAL TECHNICAL ASSESSMENT

| | | |
|--|---|---|
| National Technical Assessment made by | jr. brig. mgr inż. Grzegorz Mroczko Title or equivalent identification, first and last name | 22 February 2023 Date, signature |
| National Technical Assessment, issue 2, authorised by | mgr inż. Konrad Zaciera Title or equivalent identification, first and last name | 22 February 2023 Date, signature |

ADDITIONAL INFORMATION**Regulations**

1. Act of 16 April 2004 on construction products (Dz No. 2021, item 1213).
2. Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Dz. U. 2016, item 1968).
3. Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the methods of declaring the performance of construction products and the method of marking them with a construction mark (Dz. U. of 2016, item 1966, as amended).
4. Regulation of the Minister of Infrastructure of 12 April 2002 on the technical conditions to be met by buildings and their location (consolidated text, Dz.U. 2022, item 1225).

Changes made to the CNBOP-PIB National Technical Assessment

In this CNBOP-PIB National Technical Assessment the following changes have been introduced in relation to the CNBOP-PIB National Technical Assessment No. CNBOP-PIB-KOT-2023/0371-3703 issue 1:

1. in section 2.3.2, subsection 18 was added. - possibility of fixing light fixtures with weight up to 20 kg made of non-combustible materials to horizontal channel sections forming part of the support structures (structure number 9 in Annex 2) provided that the permissible load of the structure is not exceeded.
2. the list: Reports, test reports, evaluations, classifications, used in the procedure for issuing the National Technical Assessment has been supplemented with the letter/opinion No. Hu-001-23 dated 10.01.2023 issued by Fires, s.r.o. Osloboditel'ov 282, 059 35 Batizovce, Slovakia.