Tecnikabel

WHERE FUTURE FLOWS

CABLES FOR

Automation

AUTOMATION SECTOR

Introduction

Tecnikabel is a leading European manufacturer of high-performance special cables designed for a wide range of industrial and technical applications. The ongoing globalisation of supply chains has accelerated the evolution of the maritime sector, including the emergence of new non-European players. We are observing a steady increase in electrification on board, with growing demand for power, control and instrumentation systems.

Industrial automation is driving rapid growth in both data volumes and transmission speeds, demanding cable systems that combine signal integrity, mechanical resilience and dynamic compatibility. In harsh production environments — where motion across multiple axes, high acceleration and continuous bending cycles are standard operating conditions — cable performance is a critical factor. Tecnikabel designs and manufactures copper cables for motion and drive applications across a broad range of industries, from food processing and packaging to machine tools, robotics, conveyor systems and handling equipment. Each solution is engineered to meet the specific mechanical and electrical requirements of the application, with a wide range of materials selected to guarantee long service life even under sustained dynamic stress.Our engineering teams work alongside customers to develop the right product for every use case, supporting compliance with both European and North American market standards.

OUR SECTORS


TRANSPORTATION


AUTOMATION


TELECOMMUNICATION


DEFENSE


MARINE OIL GAS


SUBSEA

BUILDING TECHNOLOGY

In today's technological landscape, many applications demand performance and engineering characteristics that exceed standard cable solutions. When off-the-shelf products cannot meet extreme or unconventional requirements, our custom design capability becomes essential. Tecnikabel acts as a technical partner, developing and manufacturing highly specialised cables engineered for critical functions and challenging operating environments.

Tecnikabel is focused on constant product innovation to get competitive advantages with endless commitment to research and development.

PRODUCTION
Updated production systems, rigorous process controls and skilled operators ensure an efficient, flexible and reliable manufacturing flow. Over nearly half a century of activity, we have engineered and produced more than 26,000 different cable configurations.

FINAL INSPECTIONS
At the end of every production cycle, each cable undergoes full electrical, optical and physical verification to ensure complete compliance with the customer's technical specifications.

LABORATORY TESTS
Our cables are subjected to demanding laboratory tests that replicate critical application conditions. Beyond the standard evaluations required by current regulations, we have developed dedicated equipment for mechanical, environmental, electrical and optical testing to validate performance in extreme scenarios.

MATERIALS RESEARCH AND DEVELOPMENT
With nearly fifty years of experience, we continue to research and develop advanced materials aimed at improving performance, optimising costs and meeting the evolving technical requirements of our customers.

QUALITY SYSTEM
Since 1978, our commitment to Quality has earned Tecnikabel recognition from major American and European authorities, ensuring compliance with the most rigorous international manufacturing and quality standards.

Guaranteed excellence

Tecnikabel's constant commitment to quality has earned recognition from leading American and European authorities, ensuring full compliance with the most demanding international manufacturing and quality standards.

COMPANY MANAGEMENT SYSTEM CERTIFICATION

PRODUCT CERTIFICATION

All cables in this sector are certified:

Reliability you can trust

Safety-driven cable innovation

ADDRESSING NEW HOMOLOGATION REQUIREMENTS: EXTENDED FIRE DURATION

Engineers are continuously designing powerful systems with extensive cabling infrastructures, where high-speed transmission protocols must handle massive volumes of data—including signals and images. These critical communication systems demand maximum stability and peak performance, utilizing both optical fiber and copper cables. Tecnikabel proactively meets the latest offshore and shipbuilding requirements set by homologation bodies. We ensure full-circuit integrity during fire scenarios, complying with IEC 60331 standards for an extended duration of up to 180 minutes. We transform these stringent technical challenges into reliable, future-ready solutions.

GAS-TIGHT RESISTANCE FOR SAFER OPERATIONS IN EXPLOSIVE ENVIRONMENTS

The demand for high-quality data connections between explosive areas and safe zones is growing. Gas-permeable cavities in cables can allow explosive mixtures to migrate to densely populated areas, making strict adherence to technical specifications essential. This need is increasingly important with the expanded use of LNG (Liquefied NatuRAL Gas) for vessel propulsion, storage, and transportation. Tecnikabel, as a co-designer and problem solver, has developed a complete range of copper data cables specifically for such environments. These solutions comply with IEC 60079-14, meeting not only the mechanical, chemical, and thermal requirements for explosive areas but also the critical standards for gas migration. Our cables can therefore be installed in offshore applications without restrictions, providing the optimal solution for safety and reliability.

ENHANCED CABLE PERFORMANCE FOR ARCTIC ENVIRONMENTS

Our cable range is engineered for superior performance in extremely cold conditions. They are suitable for installation at temperatures down to –30 °C, with permanent operating capability as low as –62 °C. The performance of our TKSEA cables in Arctic conditions is validated through cold bend and cold impact tests, in accordance with the North American (Canadian) standard CSA 22/2. Through continuous innovation and proven reliability, Tecnikabel contributes significantly to enhancing safety and operational longevity on board ships and offshore structures worldwide.

Passion flows through our cables.

Content index

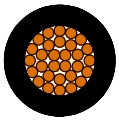
These images are for illustrative purposes.

TK - F190
FOR STATIC APPLICATION, PVC OIL RESISTANT, UL/CSA APPROVALS

UL and CSA compliant single-core and multicore cables to meet the needs of industrial machinery manufacturers, suitable for export to all countries that adopt these REFERENCE STANDARDS. Used specifically to power and control machine tools, conveyor belts, conveyors, assembly chains, automated lines, and the associated electric panels.
TKF190® series cables are suitable for static installations. The PVC employed makes it suitable for use in damp environments where resistance to emulsions, cutting oils, and numerous other aggressive chemical substances is needed.

TK-F190-SINGLE CORE Cable STYLE 105°C 300 V / 600 V

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 Class 5
Insulation	PVC Y (UL-CSA Standards)
Colour code	Available upon request

TECHNICAL DATA

Operating voltage	300 V for Styles 1007/1569 600V for Style 1015
Test voltage	2000 V a.c. for Styles 1007/1569 3000 V a.c. for Styles 1015
Temperature range	-20°C ÷ +90°C (Static Installation) for Style 1007 -10°C ÷ +105°C (Static Installation) for Style 1569 -10°C ÷ +105°C (Static Installation) for Style 1015
Bending Radius Static Installation	4 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	Single-core wires UL-CSA 90°C-105°C 300 V and 105°C 600V, gauges from AWG30 to AWG4/0 and from 250MCM to 1000MCM
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SINGLE CORE STYLE 1007/1570 90°C +105°C -300 V				
Tecnikabel Code	Description	Ø Nomina mm	Copper weight Kg/km	Cable weight Kg/km
205TKF1901x	AWG30	1.2	0.5	1.9
208TKF1901x	AWG28	1.3	0.9	2.4
212TKF1901x	AWG26	1.4	1.4	3.1
218TKF1901x	AWG24	1.5	2.0	4
224TKF1901x	AWG22	1.6	3.3	5.5
231TKF1901x	AWG20	1.9	5.4	8
238TKF1901x	AWG18	2.1	8.2	11.2
243TKF1901x	AWG16	2.5	13	16.6

MAIN FEATURES - SINGLE CORE STYLE 1015 105°C 600V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
218TKF1902x	AWG24	2.3	2	7.8
224TKF1902x	AWG22	2.5	3.3	9.7
231TKF1902x	AWG20	2.7	5.4	12.8
238TKF1902x	AWG18	3	8.2	16.4
243TKF1902x	AWG16	3.2	13	22.7
250TKF1901x	AWG14	3.5	20.1	31.1
263TKF1901x	AWG12	4.1	36.5	50.3
269TKF1901x	AWG10	4.6	50	65.5
278TKF1901x	AWG8	6.2	94	125
283TKF1901x	AWG6	8.4	128	180
288TKF1901x	AWG4	9.6	211	272
291TKF1901x	AWG3	10.7	256	322
292TKF1901x	AWG2	11.2	345	417
294TKF1901x	AWG1	13.5	412	526
296TKF1901x	AWG1/0	14.7	528	653
297TKF1901x	AWG2/0	15.8	647	777
29ATKF1901x	AWG3/0	16.8	902	1051
29BTKF1901x	AWG4/0	18.4	1152	1322
29CTKF1901x	250MCM	21.2	1220	1450
29DTKF1901x	300MCM	22.2	1469	1840
29ETKF1901x	355MCM	25.4	1776	2056
29GTKF1901x	400MCM	26	1949	2250
29HTKF1901x	450MCM	27.8	2189	2499
29JTKF1901x	500MCM	29.2	2429	2756
29KTKF1901x	555MCM	31.2	2678	3078
29LTKF1901x	600MCM	32.3	2918	3333
29XTKF1901x	650MCM	32.8	3158	3580
29YTKF1901x	700MCM	33	3408	3853
29ZTKF1901x	750MCM	33.5	3648	4080
29MTKF1901x	800MCM	34	3908	4330
29NTKF1901x	900MCM	36	4377	4844
29OTKF1901x	1000MCM	38	4896	5393

TK-F190-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	PVC Y (UL-CSA Standards)
Colour code	DIN 47100
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart - page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V
Test voltage	2000 V a.c.
Temperature range	-20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area ≤ 0,50 mm² (AWG21)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
322TKF19001	2x0.25 mm²	4.2	4.8	21.4
322TKF19002	3x0.25 mm²	4.4	7.5	25
322TKF19003	4x0.25 mm²	4.6	10	29.4
322TKF19004	5x0.25 mm²	5	12.5	34.1
322TKF19005	7x0.25 mm²	5.4	17.5	42.5
322TKF19006	12x0.25 mm²	6.7	29	56
322TKF19007	16x0.25 mm²	7.5	37	82
322TKF19008	18x0.25 mm²	7.8	45	90.2
322TKF19009	25x0.25 mm²	9.2	63	119
322TKF19010	30x0.25 mm²	9.5	72	107
322TKF19011	36x0.25 mm²	10.4	86	163

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
325TKF19001	2x0.35 mm²	4.4	6.7	27
325TKF19002	3x0.35 mm²	4.6	10	32
325TKF19003	4x0.35 mm²	4.8	13	38
325TKF19004	5x0.35 mm²	5.2	17	44
325TKF19005	7x0.35 mm²	5.6	23.5	55
325TKF19006	12x0.35 mm²	7.1	41	86
325TKF19007	16x0.35 mm²	7.7	54	110
325TKF19008	18x0.35 mm²	8.3	61	120
325TKF19009	25x0.35 mm²	9.8	84	164
325TKF19010	30x0.35 mm²	10.2	101	186
325TKF19011	36x0.35 mm²	11	121	221

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKF19001	2x0.25 mm²	4.6	15	23
522TKF19002	3x0.25 mm²	4.8	19	33.4
522TKF19003	4x0.25 mm²	5	21	39.2
522TKF19004	5x0.25 mm²	5.5	29	45.1
522TKF19005	7x0.25 mm²	5.8	39	61
522TKF19006	12x0.25 mm²	7.3	54	90
522TKF19007	16x0.25 mm²	8	67	106
522TKF19008	18x0.25 mm²	8.2	78	117
522TKF19009	25x0.25 mm²	9.9	101	152
522TKF19010	30x0.25 mm²	10.2	105	170
522TKF19011	36x0.25 mm²	11	118	198

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel Code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKF19001	2x0.35 mm²	4.9	16	34.6
525TKF19002	3x0.35 mm²	5	20	40.2
525TKF19003	4x0.35 mm²	5.2	25	48
525TKF19004	5x0.35 mm²	5.8	29	55.2
525TKF19005	7x0.35 mm²	6.1	38	68
525TKF19006	12x0.35 mm²	7.7	63	112
525TKF19007	16x0.35 mm²	8.2	83	137
525TKF19008	18x0.35 mm²	9	88	149
525TKF19009	25x0.35 mm²	10.4	122	195
525TKF19010	30x0.35 mm²	11.8	142	221
525TKF19011	36x0.35 mm²	11.6	165	257

TK-F190-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKF19015	2x2x0.25 mm²	6.2	23	45.7
522TKF19016	3x2x0.25 mm²	6.4	28	55.1
522TKF19017	4x2x0.25 mm²	7	38	72.2
522TKF19018	6x2x0.25 mm²	8	52	96.2
522TKF19019	8x2x0.25 mm²	9	65	116
522TKF19020	10x2x0.25 mm²	10.4	75	137
522TKF19021	12x2x0.25 mm²	10.9	89	156
522TKF19022	16x2x0.25 mm²	12.1	108	189

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKF19015	2x2x0.35 mm²	6.8	28	54.7
525TKF19016	3x2x0.35 mm²	7	42	76.5
525TKF19017	4x2x0.35 mm²	7.5	49	88.7
525TKF19018	6x2x0.35 mm²	8.8	68	119.1
525TKF19019	8x2x0.35 mm²	9.6	83	143
525TKF19020	10x2x0.35 mm²	11.2	102	173
525TKF19021	12x2x0.35 mm²	12.6	120	198
525TKF19022	16x2x0.35 mm²	12.6	147	257

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
530TKF19001	2x2x0.50 mm²	7.4	45	79.3
530TKF19002	3x2x0.50 mm²	7.9	58	103
530TKF19003	4x2x0.50 mm²	8.3	73	118
530TKF19004	6x2x0.50 mm²	10	101	160
530TKF19005	8x2x0.50 mm²	11	124	194
530TKF19006	10x2x0.50 mm²	12.5	150	236

TK-F190-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 — Class 5
Insulation	PVC Y (UL-CSA Standards)
Core identification	Black Numbered + Yellow/Green
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² (AWG18) 1000 V Cross-sectional area > 1.0 mm² (AWG18)
Test voltage	2000 V a.c. Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² (AWG18) 3000 V a.c. Cross-sectional area > 1.0 mm² (AWG18).
Temperature range	-20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA - C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² (AWG18) UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V, Cross-sectional area > 1.0 mm² (AWG18)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
330TKF19001	2x0.50 mm²	4.7	11	42.8
330TKF19002	3x0.50 mm²	4.9	15	51.2
330TKF19003	4x0.50 mm²	5.3	23	61.8
330TKF19004	5x0.50 mm²	5.8	25	72.6
330TKF19005	7x0.50 mm²	6.4	40	93.4
330TKF19006	12x0.50 mm²	8	58	147
330TKF19007	18x0.50 mm²	9.3	103	216
330TKF19008	25x0.50 mm²	11	143	288
330TKF19009	34x0.50 mm²	12.4	165	379
330TKF19010	41x0.50 mm²	14	197	435

TK-F190-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
340TKF19001	2x1 mm²	5.7	19	51.7
340TKF19002	3x1 mm²	5.9	29	62.6
340TKF19003	4x1 mm²	6.5	38	75.1
340TKF19004	5x1 mm²	7.1	48	90.2
340TKF19005	7x1 mm²	7.5	67	117
340TKF19006	12x1 mm²	10	116	186
340TKF19007	18x1 mm²	11.5	173	272
340TKF19008	25x1 mm²	14.2	240	315
340TKF19009	34x1 mm²	16.2	327	493
340TKF19010	41x1 mm²	17.6	394	577

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
530TKF19007	2x0.50 mm²	5.2	30	50.1
530TKF19008	3x0.50 mm²	5.4	39	61.5
530TKF19009	4x0.50 mm²	5.8	46	83.5
530TKF19010	5x0.50 mm²	6.2	54	94.7
530TKF19011	7x0.50 mm²	7	70	118
530TKF19012	12x0.50 mm²	8.6	106	181
530TKF19013	18x0.50 mm²	10	153	253
530TKF19014	25x0.50 mm²	11.6	202	330
530TKF19015	34x0.50 mm²	13	277	458
530TKF19016	41x0.50 mm²	14.6	328	549

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
540TKF19001	2x1 mm²	6.1	42	58.8
540TKF19002	3x1 mm²	6.3	56	82.7
540TKF19003	4x1 mm²	7	68	95.3
540TKF19004	5x1 mm²	7.5	79	114
540TKF19005	7x1 mm²	8	99	143
540TKF19006	12x1 mm²	10.8	160	219
540TKF19007	18x1 mm²	12.2	250	315
540TKF19008	25x1 mm²	15	330	446
540TKF19009	34x1 mm²	17	450	581
540TKF19010	41x1 mm²	18.4	530	659

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
345TKF19001	2x1.5 mm²	6.7	29	68.8
345TKF19002	3x1.5 mm²	7.2	43	85
345TKF19003	4x1.5 mm²	7.8	58	104
345TKF19004	5x1.5 mm²	8.6	72	124
345TKF19005	7x1.5 mm²	9.4	101	162
345TKF19006	12x1.5 mm²	12.3	173	267
345TKF19007	18x1.5 mm²	14.5	260	384
345TKF19008	25x1.5 mm²	17.5	360	529
345TKF19009	34x1.5 mm²	20.2	490	709
345TKF19010	41x1.5 mm²	23.2	590	882

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
355TKF19001	2x2.5 mm²	8	48	93.4
355TKF19002	3x2.5 mm²	8.5	72	117
355TKF19003	4x2.5 mm²	9.2	96	145
355TKF19004	5x2.5 mm²	10.1	120	175
355TKF19005	7x2.5 mm²	11	168	231
355TKF19006	12x2.5 mm²	14.8	288	385
355TKF19007	18x2.5 mm²	17.8	432	554
355TKF19008	25x2.5 mm²	22	600	781

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
365TKF19001	2x4 mm²	9	77	134
365TKF19002	3x4 mm²	9.5	116	171
365TKF19003	4x4 mm²	10.6	154	214
365TKF19004	5x4 mm²	11.8	192	263
365TKF19005	7x4 mm²	12.8	269	355

TK-F190-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
545TKF19001	2x1.5 mm²	7.2	57	83.9
545TKF19002	3x1.5 mm²	7.6	75	105
545TKF19003	4x1.5 mm²	8.2	91	126
545TKF19004	5x1.5 mm²	9.2	110	149
545TKF19005	7x1.5 mm²	10	140	192
545TKF19006	12x1.5 mm²	13	240	304
545TKF19007	18x1.5 mm²	15.2	345	446
545TKF19008	25x1.5 mm²	18.2	497	608
545TKF19009	34x1.5 mm²	21.2	650	843
545TKF19010	41x1.5 mm²	24.2	720	998

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
555TKF19001	2x2.5 mm²	8.5	100	107
555TKF19002	3x2.5 mm²	9	120	138
555TKF19003	4x2.5 mm²	9.9	160	167
555TKF19004	5x2.5 mm²	10.7	190	204
555TKF19005	7x2.5 mm²	11.8	261	260
555TKF19006	12x2.5 mm²	15.8	311	422
555TKF19007	18x2.5 mm²	18.6	472	635
555TKF19008	25x2.5 mm²	23	640	911

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
565TKF19001	2x4 mm²	9.6	110	134
565TKF19002	3x4 mm²	10.2	165	193
565TKF19003	4x4 mm²	11.2	230	238
565TKF19004	5x4 mm²	12.4	280	288
565TKF19005	7x4 mm²	13.6	360	385

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
370TKF19001	4x6 mm²	12.8	230	327
370TKF19002	5x6 mm²	14.2	288	395
370TKF19003	7x6 mm²	15.6	403	533

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
380TKF19001	4x10 mm²	16.7	384	527
380TKF19002	5x10 mm²	18.8	480	645
380TKF19003	7x10 mm²	20.6	672	882

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
385TKF19001	4x16 mm²	20.6	615	857
385TKF19002	5x16 mm²	22.7	768	1041
385TKF19003	7x16 mm²	25	1076	1385

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
390TKF19001	4x25 mm²	26	960	1315
393TKF19001	4x35 mm²	30.5	1344	1865
395TKF19001	4x50 mm²	37	1920	2866
397TKF19001	4x70 mm²	40	2688	3561
398TKF19001	4x95 mm²	45	3650	4713

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
570TKF19001	4x6 mm²	13.6	282	352
570TKF19002	5x6 mm²	15	340	408
570TKF19003	7x6 mm²	16.4	450	573

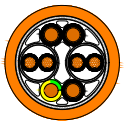
MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
580TKF19001	4x10 mm²	17.6	485	566
580TKF19002	5x10 mm²	19.6	562	697
580TKF19003	7x10 mm²	21.6	796	985

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
585TKF19001	4x16 mm²	21.5	723	858
585TKF19002	5x16 mm²	23.5	889	1086
585TKF19003	7x16 mm²	26	1240	1439

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
590TKF19001	4x25 mm²	27	1090	1442
593TKF19001	4x35 mm²	31.8	1536	2046
595TKF19001	4x50 mm²	38.2	2381	3073
597TKF19001	4x70 mm²	41.2	2921	3801
598TKF19001	4x95 mm²	46.8	3950	4992

TK-F190-SERVOMOTOR POWER CABLE SHIELDED 0.6/1 kV

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered U/L1/C/L+, V/L2, W/L3/D/L-, Yellow/Green
Pairs Identification (where request)	One pair: black, white. Two pairs: Black Numbered 5÷6 and Black Numbered 7÷8
Pairs Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V Cross-sectional area ≥ 1.0 mm² (AWG18)
Test voltage	4000V a.c. Cross-sectional area ≥ 1.0 mm² (AWG18)
Temperature range	-20°C ÷ +90°C
Bending Radius Static Installation	5 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL75, UL1581, UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V Cross-sectional area ≥ 1.0 mm² (AWG18)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SERVO CABLES 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
545TKF19013	4G1.5 H2	8.4	83	131
555TKF19009	4G2.5 H2	10.6	130	198
565TKF19006	4G4 H2	11.5	193	276
570TKF19004	4G6 H2	13.2	275	376
580TKF19004	4G10 H2	16.5	440	567
585TKF19004	4G16 H2	21.2	705	885
590TKF19002	4G25 H2	25	1003	1314
593TKF19002	4G35 H2	28.8	1514	2146
595TKF19002	4G50 H2	33.9	2168	2992

MAIN FEATURES - SERVO CABLES 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
545TKF19016	[4G1.5 + (2x1.5) H2]H2	11.6	149	221
555TKF19016	[4G2.5 + (2x1.5) H2]H2	13	192	264
565TKF19016	[4G4 + (2x1.5) H2]H2	14.3	255	315
570TKF19005	[4G6 + (2x1.5) H2]H2	15.8	339	480
580TKF19005	[4G10 + (2x1.5) H2]H2	18.5	526	774
585TKF19005	[4G16 + (2x1.5) H2]H2	23.6	773	1043
590TKF19003	[4G25 + (2x1.5) H2]H2	28.5	1190	1567
593TKF19003	[4G35 + (2x1.5) H2]H2	31	1590	1978
595TKF19003	[4G50 + (2x1.5) H2]H2	34.5	2230	2766

MAIN FEATURES - SERVO CABLES 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
540TKF19015	[4G1 + 2x(2x0.75) H2]H2	12	135	216
545TKF19015	[4G1.5 + 2x(2x0.75) H2]H2	12.6	154	259
555TKF19012	[4G2.5 + 2x(2x1) H2]H2	14.2	210	320
565TKF19008	[4G4 + (2x1) + (2x1.5) H2]H2	15.8	287	439
570TKF19006	[4G6 + (2x1) + (2x1.5) H2]H2	17.5	370	594
580TKF19006	[4G10 + (2x1) + (2x1.5) H2]H2	20.5	570	845
585TKF19006	[4G16 + 2x (2x1.5) H2]H2	25.5	830	1231
590TKF19004	[4G25 + 2x (2x1.5) H2]H2	28.8	1213	1615
593TKF19004	[4G35 + 2x (2x1.5) H2]H2	31.2	1598	2022

HYBRID SERVO CABLE SHIELDED 0.6/1 kV

CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered U/L1/C/L+, V/L2, W/L3/D/L-, Yellow/Green
Pairs Identification (where request)	One pair: blue, white. Two pairs: black, white and blue, white
Pairs Shield (where request)	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V Cross-sectional area ≥ 1.0 mm² (AWG18)
Test voltage	4000V a.c. Cross-sectional area ≥ 1.0 mm² (AWG18)
Temperature range	-20°C ÷ +90°C
Bending Radius Static Installation	5 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

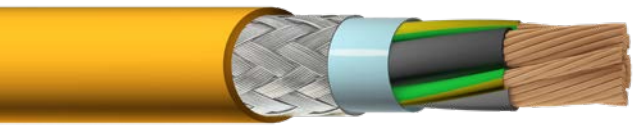
European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - DSL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
545TKF19D01	[4G1.5+(2x1)H2+(2xAWG22)H2/H]H2	12.8	155	268
545TKF19D02	[4G1.5+(2xAWG22)H2/H]H2	11.2	113	198
555TKF19D01	[4G2.5+(2x1)H2+(2xAWG22)H2/H]H2	14	198	316
555TKF19D02	[4G2.5+(2xAWG22)H2/H]H2	12.9	161	273

HIPERFACE® DSL ...Guaranteed up to 100 m...

TK-F190-VECTORFLEX 0.6/1 kV

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Grey, Black, Brown, Yellow/Green
Overall Shield	Aluminum/Plastic Tape + Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V
Test voltage	3000 V a.c.
Temperature range	-20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	8 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE
(RoHS - Reduction of Hazardous Substances)
and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - VECTORFLEX				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
585TKF19004	(3x16 + 3G2.5)H2	20.2	586	852
590TKF19004	(3x25 + 3G4)H2	24.5	930	1170
593TKF19004	(3x35 + 3G6)H2	27.4	1360	1756
595TKF19003	(3x50 + 3G10)H2	29.6	1841	2207
597TKF19002	(3x70 + 3G10)H2	34	2640	2889
598TKF19001	(3x95 + 3G16)H2	38.5	3574	3851
599TKF19001	(3x120 + 3G16)H2	43	4290	4690
59DTKF19001	(3x150 + 3G25)H2	51	5365	5552
59FTKF19001	(3x185 + 3G35)H2	55	6700	7099
59ITKF19001	(3x240 + 3G42.5)H2	62.5	8320	9128

TK-F190-ENCODER AND RESOLVER CABLE

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 Class 5
Insulation	PVC Y and/or Polyolefin (UL-CSA standard)
Core identification	More informations are available upon request
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	-20°C ÷ +90°C
Bending Radius Static Installation	5 x Ø

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION HEIDENHAIN				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
514TKF19001	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	80	102
514TKF19002	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.7	66	124
514TKF19003	(4x2x0.14 + 4x0.50)H2	8.6	51	106
514TKF1901N	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	80	102
514TKF1902N	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.7	66	124
514TKF1903N	(4x2x0.14 + 4x0.50)H2	8.6	51	106

Note : Codes ending with letter N have a Black Sheath

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION B&R				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
514TKF19006	(5x2x0.14 + 2x0.50)H2	7.9	42	73.2
518TKF19026	(3x2xAWG24)H2	6.5	27	52.4

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION ELAU				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKF19024	(3x2x0.25 + 2x0.50)H2	8.2	44	88
522TKF19025	3x(2x0.25)H2	8.5	74	150

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION CONTROL TECHNIQUES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKF19023	[(2x0.34)H+6x2x0.34+2x1]H2	11	102	172
512TKF19002	(2x2xAWG26)H2	5.6	19	45

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION LENZE				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
514TKF19007	3x(2x0.14)H2 + (2x0.50)H2	9.4	47	152
514TKF19008	4x(2x0.14)H2 + (2x1)H2	11.8	70	229

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION YASKAWA				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKF19024	(2x2x0.34)H2	7	36	83.3

TK-F190-ENCODER AND RESOLVER CABLE

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION BOSCH REXROTH				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight· Kg/km	Cable weight · Kg/km
522TKF19027	(4x2x0.25 + 2x0.50)H2	8.7	65	111
514TKF19009	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.7	93	165
522TKF19028	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKF19017	(9x0.50)H2	8.8	75	148
522TKF1027A	(4x2x0.25 + 2x0.50)H2	8.7	65	111
514TKF1909A	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.7	93	165
522TKF1028A	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKF1017A	(9x0.50)H2	8.8	75	148

Note : Codes ending with letter A have a Orange Sheath

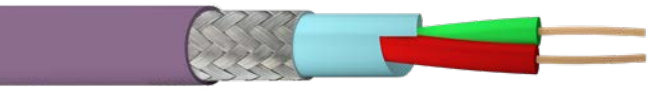
MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION SIEMENS				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKF19001	(12x0.25)H2	7.2	48	82.3
526TKF19001	(4x2x0.38 + 4x0.50)H2	9.2	71	130
517TKF19001	(8x2x0.18)H2	7.8	54	85
517TKF19006	(4x2x0.18)H2	6.5	28	45
514TKF19010	[3x(2x0.14)H1 + 4x0.14 + 4x0.25 + 2x0.50]H2	9.8	76	139
514TKF19011	[3x(2x0.14)H1 + 4X0.14 + 2x0.50]H2	8.6	66	101
512TKF19004	(2x2xAWG26 + 2xAWG22)H2 Drive Cliq	7	33	71
518TKF19036	(2x2xAWG24+2xAWG22)H2 Drive Cliq	7.3	36	74

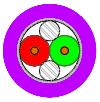
MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION FANUC				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
517TKF19002	(4x2x0.18 + 2x0.50)H2	7.6	33	70.5
517TKF19003	(3x2x0.18 + 6x0.50)H2	8.4	63	94
517TKF19004	(3x2x0.18 + 6x1)H2	9.4	89	140
517TKF19005	(5x2x0.18 + 6x0.50)H2	9.4	71	94
530TKF19018	(2x0.18 + 5x0.5)H2	7.4	49	143
530TKF19019	(2x2x0.18 + 5x0.5)H2	7.7	45	84.4
518TKF19027	(10x2xAWG24)H2	11.2	60	121
538TKF1013V	(10x2xAWG28)H2	8.5	42	66

MAIN FEATURES - RESOLVER SIGNAL TRANSMISSION				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKF19029	[3x(2x0.25)H2]H2	8.5	74	150
522TKF19030	[4x(2x0.25)H2]H2	9	85	120
522TKF19031	[8x(2x0.25)H2]H2	11.6	139	206
525TKF19025	[4x(2x0.34)H2]H2	10.5	97	145
525TKF19026	[5x(2x0.34)H2]H2	12.2	113	166

TK-F190 BUS CABLE – PROFIBUS L2 DP-FIP

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL





CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 Class 5 or Solid Conductor Ø 0.64 mm
Insulation	Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø (Static Installation)
Mutual capacitance	≤ 30 pF/m
Characteristic impedance	150 Ω ± 15 Ω
Transmission speed	12 Mbit/s with maximum length 200m 0.6 kbit/s with maximum length 1000m

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

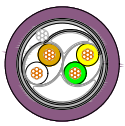
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - PROFIBUS L2 DP-FIP				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
525TKF19027	(1x2xØ 0.64 mm)HH2	7.9	21	66.1
524TKF19023	(1x2x0.34 mm²)HH2	7.9	24	70.4
525TKF19031	(1x2x0.25 mm²)HH2	7.9	21	67.1
525TKF19027	1x2xØ 0.64 mm		Green - Red	
524TKF19023	1x2x0.34 mm²		Green - Red	
525TKF19031	1x2x0.25 mm²		Green - Red	

TK-F190 BUS CABLE – CANOPEN – CANBUS

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and/or Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	1000 Kbit/s with maximum length 40m 500 Kbit/s with maximum length 300m 100 Kbit/s with maximum length 600m 50 Kbit/s with maximum length 1000m

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 VV
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

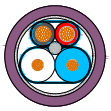
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLE - CANOPEN - CANBUS				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
525TKF19029	(2x0.34)H2	6	22	50
525TKF19028	(2x2x0.34)H2	7	31.7	68.5
525TKF19030	(1x4x0.34)Q/H2	6.5	31.7	68.5
530TKF19020	(2x0.50)H2	6.7	25	69.1
530TKF19021	(2x2x0.50)H2	8.4	43	93
525TKF19029	2x0.34	(White - Brown)		
525TKF19028	2x2x0.34	(White - Brown) - (Green - Yellow)		
525TKF19030	1x4x0.34	White - Green - Brown - Yellow		
530TKF19020	2x0.50	(White - Brown)		
530TKF19021	2x2x0.50	(White - Brown) - (Green - Yellow)		

TK-F190 BUS CABLE – DEVICENET drop and trunk

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin and Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic on each pairs
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø
Mutual capacitance	≤ 50 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 200m 250 Kbit/s with maximum length 250m 125 Kbit/s with maximum length 500m

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL - 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

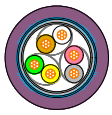
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - DEVICENET				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
518TKF19032	[(2xAWG24)H + (2xAWG22)H]H2 Drop	7.2	28	74.7
538TKF19014	[(2xAWG18)H + (2xAWG15)H]H2 Trunk	11	91	179
518TKF19032	2xAWG24 - Data 2xAWG22 - Power		(Blue - White) (Red - White)	
538TKF19014	2xAWG18 - Data 2xAWG15 - Power		(Blue - White) (Red - Black)	

TKF190-BUS CABLE INTERBUS

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and/or Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 400m

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

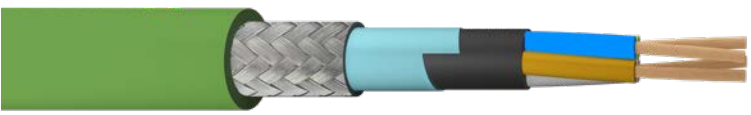
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - INTERBUS				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
522TKF19032	(3x2x0.22)HH2	6.6	22	61.7
522TKF19033	(3x2x0.22+3G1)HH2	8	54	96.6
522TKF19032	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
522TKF19033	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
	3G1	Blue – Red – Yellow/Green		

TK-F190 ethernet – profinet/ethercat Category 5e

TK-F190-SERIES CABLES FOR STATIC APPLICATIONS PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Inner shealth	Only Profinet/Ethercat version
Overall Shield	Aluminum/Plastic Tape and/or Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V
Test voltage	1000 V
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	100 Mbit/s with maximum length 100m 10 Mbit/s with maximum length 500m

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

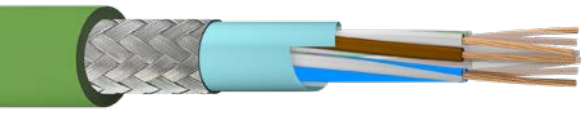
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES -ETHERNET - PROFINET/ETHERNET CATEGORY 5E				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
518TKF19033	Ethernet Category 5E (2x2xAWG24)HH2	6.2	21	50
518TKF19034	Ethernet Category 5E (4x2xAWG24)HH2	6.3	27	52
512TKF19003	Ethernet Category 5E (4x2xAWG26)HH2	5.5	23	42
524TKF19024	Ethercat/Profinet Category 5E (4xAWG22) HH2	6.5	31	65
518TKF19039	Ethercat/Profinet Category 5E (4xAWG24) HH2	5.5	22	46
518TKF19033	2x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange)		
518TKF19034	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) (Brown - White/Brown)		
512TKF19003	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) (Brown - White/Brown)		
524TKF19024	4xAWG22	White – Yellow – Blue – Orange		
518TKF19039	4xAWG24	White – Yellow – Blue – Orange		

TK-F190 ethernet Category 6

CableS for Static APPLICATIONS - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758



CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 - Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation)
Bending Radius Static Installation	5 x Ø
Mutual capacitance	≤ 50 pF/m
Characteristic impedance	100 Ω

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or and CSA C22.2 210.2 UL Style 2502 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CATEGORY 6				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
518TKF19035	Ethernet Category 6 (4x2xAWG24)HH2	7.8	34	70
512TKF19005	Ethernet Category 6 (4x2xAWG26)HH2	7.4	27	63
518TKF19035	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKF19005	4x2xAWG26	(Blue-White/Blue) - (Orange-White/Orange) (Green-White/Green) - (Brown-White/Brown)		

TK-F190 ethernet Category 7

CableS for Static APPLICATIONS - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758

CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 5 – IEC 60228 Class 5 – VDE 0295 Class 5
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic Tape
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 20°C ÷ + 90°C (Static Installation)
Bending Radius Static Installation	5 x Ø (Static Installation)
Mutual capacitance	≤ 50 pF/m
Characteristic impedance	100 Ω

REFERENCE STANDARDS

Cable according to UL758, UL1581 UL Style 2464	90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or and CSA C22.2 210.2 UL Style 2502 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CATEGORY 7				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
518TKF19036	Ethernet Category 7 [4x(2xAWG24)H]HH2	9.2	42	89
512TKF19006	Ethernet Category 7 [4x(2xAWG26)H]HH2	6.4	25	56
518TKF19036	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKF19006	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		

These images are for illustrative purposes.

MULTICORE CABLES UL LISTED

DEFINITIONS

UL

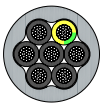
Underwriters Laboratories Inc. (UL) is a private non-profit entity for the certification of products. Though there is no law which states that a UL marked product must be used, there are States or Municipal Authorities which insist that some products must be tested by a valid and recognised certification entity.

LISTED

This is a device that has undergone an homologation process by an entity whose authority is recognised (e.g. UL or CSA), whose outcome is in the public domain, and which can be sold, installed and/or used as an asset in itself. Over time there is also provision for production control and verification procedures. In practice this is the equivalent of IMQ or VDE homologation on a household appliances or on an individual component.

TRAY CABLE MULTICORE TC-ER/TC-ER SERVO-TFFN/THHN

TRAY CABLES MULTICORE UL LISTED



CABLE SPECIFICATIONS

Conductor	Bare Copper Conductor (IEC 60228 Class 5)
Insulation	PVC + Nylon Insulation, Type THHN UL83 Table 10 and 11 Section ≥ AWG14 or Type TFFN UL 66 Table 4.7 AWG18 ÷AWG16 Colour Black Numbered + Yellow/Green
Pairs only type SERVO (if required)	2 cores twisted (Colour Pairs : Black Numbered 5÷6 and 7÷8) + Plastic Tape Shield Tinned Copper Braid – Coverage ≥ 85% Plastic Tape wrapped
Overall Shield (if required)	Shield Tinned Copper Braid – Coverage ≥ 85%
Outer jacket colour	PVC Sheath, UL 1277 T - Chapter 12.1 Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Electrical Resistance at 20°C	IEC 60228 Class 5
Insulation Resistance at 20°C	≥ 20 MΩxkm
Operating Voltage	600V
Test Voltage	3 kV a.c.
Temperature Range	-25°C ÷ +90°C (Fixed Use)
Bending Radius	5 x Ø (Fixed Use)

REFERENCE STANDARDS

Flame Retardant	IEC 60332-1 – UL 1277 and VW-1 – CSA FT1 and FT4
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Standard Reference	UL Type TC-ER 90°C 600V and CSA Type CIC 90°C 600V UL Type MTW UL Recognized

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - TRAY CABLES MULTICORE UNSHIELDED				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
338FTC02N	(2 x AWG18)	7.3	17	79
338FTC03N	(3 G AWG18)	7.6	25	91
338FTC04N	(4 G AWG18)	8.3	33	108
338FTC05N	(5 G AWG18)	9	42	130
338FTC07N	(7 G AWG18)	9.7	58	156
338FTC09N	(9 G AWG18)	11.5	75	199
338FTC12N	(12 G AWG18)	12.4	100	240
338FTC18N	(18 G AWG18)	15.2	149	370
338FTC25N	(25 G AWG18)	18	208	497
338FTC34N	(34 G AWG18)	22	226	651
338FTC41N	(41 G AWG18)	23.2	340	854
343FTC03N	(3 G AWG16)	8.4	39	117
343FTC04N	(4 G AWG16)	9.2	52	140
343FTC05N	(5 G AWG16)	10	65	166
343FTC07N	(7 G AWG16)	10.7	91	207
343FTC12N	(12 G AWG16)	14.7	156	352
343FTC18N	(18 G AWG16)	16.9	233	495
343FTC25N	(25 G AWG16)	20.1	324	664
343FTC41N	(41 G AWG16)	26	532	1103
350FTC03N	(3 G AWG14)	9.3	62	154
350FTC04N	(4 G AWG14)	10.2	83	188
350FTC05N	(5 G AWG14)	11	103	226
350FTC07N	(7 G AWG14)	11.9	145	281
350FTC12N	(12 G AWG14)	16.4	248	481
350FTC18N	(18 G AWG14)	19.2	372	695
350FTC25N	(25 G AWG14)	23.5	516	984
363FTC03N	(3 G AWG12)	10.4	98	207
363FTC04N	(4 G AWG12)	11.3	131	253
363FTC05N	(5 G AWG12)	12.4	163	312
363FTC07N	(7 G AWG12)	14.2	229	419
369FTC04N	(4 G AWG10)	14.5	204	402
369FTC05N	(5 G xAWG10)	15.8	255	491
369FTC12N	(12 G AWG10)	23.6	611	1050
378FTC04N	(4 G AWG8)	18.1	334	651
378FTC05N	(5 G xAWG8)	19.8	418	801
383FTC04N	(4 G AWG6)	22.8	589	1066
388FTC04N	(4 G AWG4)	28.2	964	1661
392FTC04N	(4 G AWG2)	30.8	1343	2164
396FTC04N	(4 G AWG1/0)	36.8	1756	3002
397FTC04N	(4 G AWG2/0)	51.8	2846	5327

TRAY CABLE MULTICORE TC-ER/TC-ER SERVO-TFFN/THHN

MAIN FEATURES - TRAY CABLES MULTICORE SHIELDED				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
538FCTO3N	(3 G AWG18)H2	8	41	103
538FCT04N	(4 G AWG18)H2	8.7	51	124
538FCT05N	(5 G AWG18) H2	9.4	62	149
538FCT07N	(7 G AWG18)H2	10.2	79	178
538FCT12N	(12 G AWG18)H2	13	144	284
538FCT18N	(18 G AWG18)H2	15.8	203	426
538FCT25N	(25 G AWG18)H2	18.6	273	566
543FTC03N	(3 G AWG16)H2	8.8	57	129
543FTC04N	(4 G AWG16)H2	9.6	72	155
543FTC05N	(5 G AWG16)H2	10.4	87	184
543FTC07N	(7 G AWG16)H2	11.2	115	228
543FTC12N	(12 G AWG16)H2	15.3	210	406
543FTC18N	(18 G AWG16)H2	17.5	295	556
543FTC25N	(25 G AWG16)H2	20.9	429	771
550FTC03N	(3 G AWG14)H2	9.7	83	164
550FTC04N	(4 G AWG14)H2	10.6	106	203
550FTC05N	(5 G AWG14)H2	11.6	142	258
550FTC07N	(7 G AWG14)H2	12.5	186	315
550FTC18N	(18 G AWG14)H2	20	465	822
550FTC25N	(25 G AWG14)H2	24.5	630	1112
563FTC03N	(3 G AWG12)H2	11	132	227
563FTC04N	(4 G AWG12)H2	11.9	171	281
563FTC07N	(7 G AWG12)H2	14.8	278	459
569FTC04N	(4 G AWG10)H2	15.1	257	433
578FCT04N	(4 G AWG8)H2	18.7	400	669
583FTC04N	(4 G AWG6)H2	23.6	699	1166
588FTC04N	(4 G AWG4)H2	29.2	1140	1814
592FTC04N	(4 G AWG2)H2	31.8	1545	2323

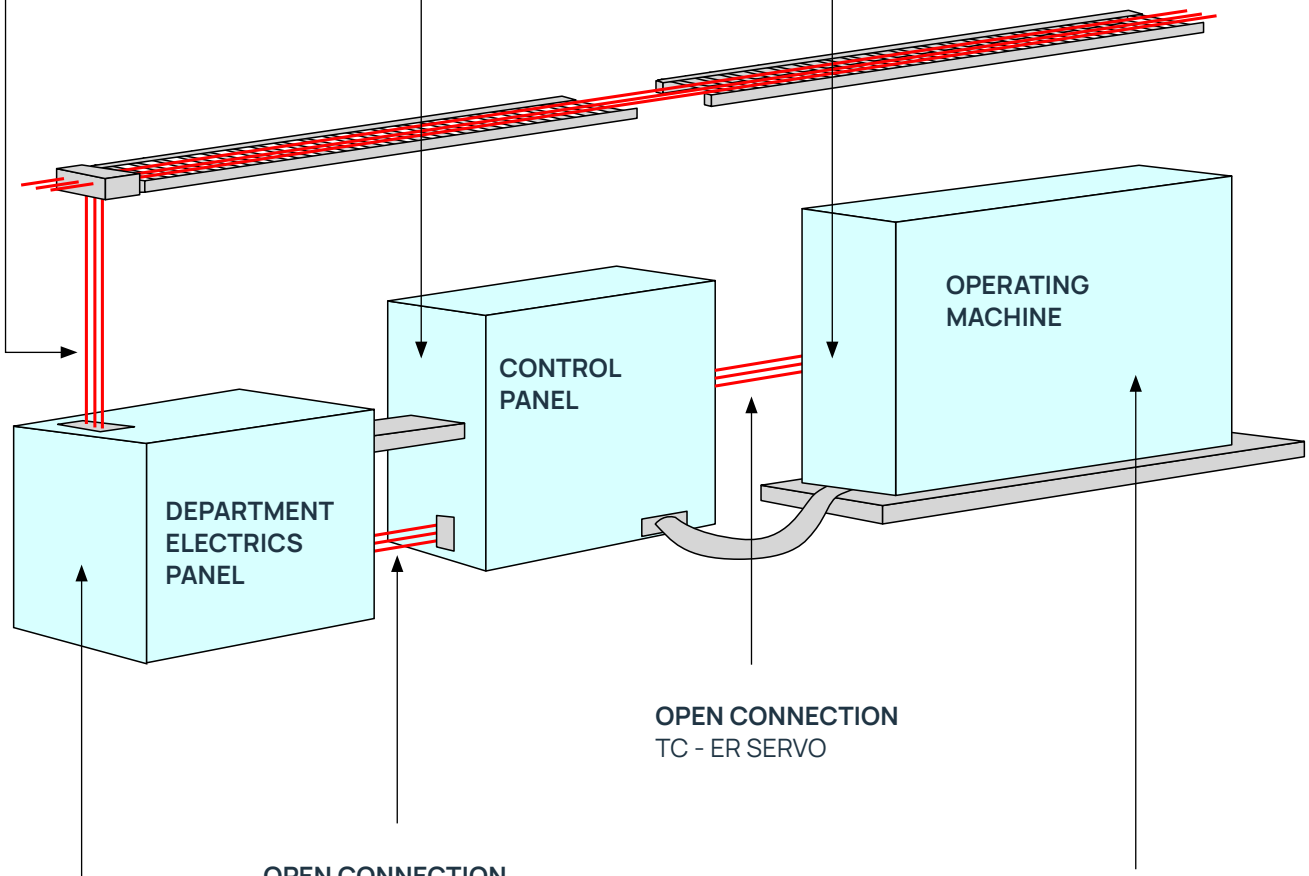
MAIN FEATURES - TRAY CABLES MULTICORE SERVO				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
538FTCS01	[4GAWG18 + (2xAWG18)H2]H2	11.6	88	198
543FTCS01	[4GAWG16 + (2xAWG18)H2]H2	12.4	125	251
550FTCS01	[4GAWG14 + (2xAWG18)H2]H2	13.2	160	299
563FTCS01	[4GAWG12 + (2xAWG16)H2]H2	15.3	227	414
569FTCS01	[4GAWG10 + (2xAWG16)H2]H2	17.3	307	533
578FTCS01	[4GAWG8 + (2xAWG16)H2]H2	20.8	480	816
583FTCS01	[4GAWG6 + (2xAWG16)H2]H2	25.5	758	1242
588FTCS01	[4GAWG4 + (2xAWG16)H2]H2	31	1195	1875
592FTCS01	[4GAWG2 + (2xAWG16)H2]H2	35	1596	2455
543FTCS02	[4GAWG16 + 2x(2xAWG18)H2]H2	15	166	347
550FTCS02	[4GAWG14 + 2x(2xAWG18)H2]H2	15.7	200	393
563FTCS02	[4GAWG12 + (2xAWG18)ST + (2xAWG16)H2]H2	17	266	486
569FTCS02	[4GAWG10 + (2xAWG18)ST + (2xAWG16)H2]H2	19.4	377	647
578FTCS02	[4GAWG8 + (2xAWG18)ST + (2xAWG16)H2]H2	23.4	515	974
583FTCS02	[4GAWG6 + 2x(2xAWG16)H2]H2	27.5	840	1385

NFPA79 - STANDARD APPLICATION DIAGRAM

OPEN RACEWAY OR PASSAGEWAY
B.T. SUPPLY LINE
THHN - THWN - THW - TW TC - ER

CLOSED RACEWAY
MTW THHN - THWN - THW - TW TC - ER
FLEXIBLE CORDS

SHEATH UL LISTED
MTW THHN - THWN - THW - TW TC - ER



OPEN CONNECTION
TC - ER SERVO

OPEN CONNECTION
TC - ER

OPERATING MACHINE
IF THE Ⓤ MACHINE IS HOMOLOGATED
I CAN USE c RU us
OTHERWISE I HAVE TO USE Ⓤ CABLES
WHERE POSSIBLE

DEPARTMENT ELECTRICS PANEL
WIRING WITH UNIPOLARS
MTW - THHN - THWN - THW - TW

UR-AWM cables only in Ⓤ raceways and sheaths if it is not possible to use c Ⓤ us cables

These images are for illustrative purposes.

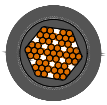
TK - FF290
FOR DYNAMIC APPLICATION, PVC OIL RESISTANT, UL/CSA APPROVALS

Product description and application

UL and CSA compliant multicore cables designed and made to satisfy the most demanding requests of manufacturers of machine tools, automatic machines and industrial systems. Excellent for use in cable chains. The installation of TK FF200® series cables is recommended for dynamic installations. The PVC outer jacket is particularly resistant to abrasion and is indicated for use in damp environments in contact with emulsions, cutting oils, and aggressive chemical substances.

TK-FF290-SINGLE CORE UNSHIELDED AND SHIELDED CABLE

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black (other colours available upon request)
Overall Shield (if required)	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Black RAL 9005 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V
Test voltage	3000 V a.c.
Temperature range	- 20°C ÷ +90°C (Static Installation) - 5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SINGLE CORE 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
270TKFF290N0N	1x6 mm²	7	58	96.5
280TKFF290N0N	1x10 mm²	8.3	96	148
285TKFF290N0N	1x16 mm²	9.6	154	216
290TKFF290N0N	1x25 mm²	11.2	240	321
293TKFF290N0N	1x35 mm²	12.7	336	454
295TKFF290N0N	1x50 mm²	15	480	625
297TKFF290N0N	1x70 mm²	16.6	672	799
298TKFF290N0N	1x95 mm²	19.4	912	1094
299TKFF290N0N	1x120 mm²	22.6	1152	1345
29DTKFF290N0N	1x150 mm²	23.8	1440	1719
29FTKFF290N0N	1x185 mm²	25.3	1776	2022
29ITKFF290N0N	1x240 mm²	28.5	2304	2514

MAIN FEATURES - SINGLE CORE SHIELDED 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
570TKFF290N0N	(1x6 mm²)H2	7.5	78	121
580TKFF290N0N	(1x10 mm²)H2	8.7	122	179
585TKFF290N0N	(1x16 mm²)H2	10.2	181	253
590TKFF290N0N	(1x25 mm²)H2	11.8	272	366
593TKFF290N0N	(1x35 mm²)H2	13.4	401	495
595TKFF290N0N	(1x50 mm²)H2	15.6	579	682
597TKFF290N0N	(1x70 mm²)H2	17.4	766	869
598TKFF290N0N	(1x95 mm²)H2	20.4	1009	1201
599TKFF290N0N	(1x120 mm²)H2	23.5	1272	1488
59DTKFF290N0N	(1x150 mm²)H2	24.6	1705	1722
59FTKFF290N0N	(1x185 mm²)H2	26.3	2095	2283
59ITKFF290N0N	(1x240 mm²)H2	29.5	2510	2697

TK-FF290-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	DIN 47100
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V
Test voltage	2000 V a.c.
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area ≤ 0.50 mm² (AWG21)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE
(WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
322TKFF29001	2x0.25 mm²	4.2	4.8	21.4
322TKFF29002	3x0.25 mm²	4.5	7.5	25
322TKFF29003	4x0.25 mm²	4.8	10	29.4
322TKFF29004	5x0.25 mm²	5.1	12.5	34.1
322TKFF29005	7x0.25 mm²	5.9	17.5	42.5
322TKFF29006	12x0.25 mm²	7	29	56
322TKFF29007	16x0.25 mm²	7.6	37	82
322TKFF29008	18x0.25 mm²	9.8	45	90.2
322TKFF29009	25x0.25 mm²	10.8	63	119
322TKFF29010	30x0.25 mm²	12	72	107
322TKFF29011	36x0.25 mm²	13.2	86	163

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
325TKFF29001	2x0.35 mm²	4.4	6.7	27
325TKFF29002	3x0.35 mm²	4.6	10	32
325TKFF29003	4x0.35 mm²	5	13	38
325TKFF29004	5x0.35 mm²	5.4	17	44
325TKFF29005	7x0.35 mm²	6.2	23.5	55
325TKFF29006	12x0.35 mm²	7.4	41	86
325TKFF29007	16x0.35 mm²	8.5	54	110
325TKFF29008	18x0.35 mm²	10.4	61	120
325TKFF29009	25x0.35 mm²	11.8	84	164
325TKFF29010	30x0.35 mm²	12.8	101	186
325TKFF29011	36x0.35 mm²	14.4	121	221

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF29001	2x0.25 mm²	4.6	15	23
522TKFF29002	3x0.25 mm²	4.9	19	33.4
522TKFF29003	4x0.25 mm²	5.2	21	39.2
522TKFF29004	5x0.25 mm²	5.5	29	45.1
522TKFF29005	7x0.25 mm²	6.3	39	61
522TKFF29006	12x0.25 mm²	7.4	54	90
522TKFF29007	16x0.25 mm²	8.2	67	106
522TKFF29008	18x0.25 mm²	10.4	78	117
522TKFF29009	25x0.25 mm²	11.5	101	152
522TKFF29010	30x0.25 mm²	12.6	105	170
522TKFF29011	36x0.25 mm²	13.8	118	198

TK-FF290-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF29001	2x0.35 mm²	4.8	16	34.6
525TKFF29002	3x0.35 mm²	5	20	40.2
525TKFF29003	4x0.35 mm²	5.4	25	48
525TKFF29004	5x0.35 mm²	5.8	29	55.2
525TKFF29005	7x0.35 mm²	6.8	38	68
525TKFF29006	12x0.35 mm²	7.8	65	112
525TKFF29007	16x0.35 mm²	9	83	137
525TKFF29008	18x0.35 mm²	11	88	149
525TKFF29009	25x0.35 mm²	12.4	122	195
525TKFF29010	30x0.35 mm²	13.4	142	221
525TKFF29011	36x0.35 mm²	15	165	257

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF29015	2x2x0.25 mm²	6.3	23	45.7
522TKFF29016	3x2x0.25 mm²	6.7	28	55.1
522TKFF29017	4x2x0.25 mm²	7.3	38	72.2
522TKFF29018	6x2x0.25 mm²	8.6	52	96.2
522TKFF29019	8x2x0.25 mm²	9.8	64	116
522TKFF29020	10x2x0.25 mm²	10.8	75	137
522TKFF29021	12x2x0.25 mm²	11.2	89	156
522TKFF29022	16x2x0.25 mm²	12.4	107	189

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF29015	2x2x0.35 mm²	7	28	54.7
525TKFF29016	3x2x0.35 mm²	7.3	42	76.5
525TKFF29017	4x2x0.35 mm²	7.9	49	88.7
525TKFF29018	6x2x0.35 mm²	9.4	68	119
525TKFF29019	8x2x0.35 mm²	10.6	83	143
525TKFF29020	10x2x0.35 mm²	12	102	173
525TKFF29021	12x2x0.35 mm²	12.6	120	198
525TKFF29022	16x2x0.35 mm²	14	147	257

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
530TKFF29001	2x2x0.50 mm²	7.8	45	79.3
530TKFF29002	3x2x0.50 mm²	8.1	58	103
530TKFF29003	4x2x0.50 mm²	8.5	73	118
530TKFF29004	6x2x0.50 mm²	10.4	101	160
530TKFF29005	8x2x0.50 mm²	11.5	124	194
530TKFF29006	10x2x0.50 mm²	13.5	150	236

TK-FF290-MULTICORE CONTROL AND power CABLE UNSHIELDED AND SHIELDED

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered + Yellow/Green
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² (AWG18) 1000 V Cross-sectional area > 1.0 mm² (AWG18)
Test voltage	2000 V a.c. Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² (AWG18) 3000 V a.c. Cross-sectional area > 1.0 mm² (AWG18)
Temperature range	-20°C ÷ +90°C (Static Installation), -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5 – 16 mm² / Dynamic Installation) 10 x Ø (25 – 95 mm² / Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area 0.5 mm² (AWG21) ÷ 1.0 mm² - (AWG18) UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V, Cross-sectional area > 1.0 mm² (AWG18)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

According to NFPA 79-2018-Chapter 12.9

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES

Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
330TKFF29001	2x0.50 mm²	5.2	11	42.8
330TKFF29002	3x0.50 mm²	5.5	17	51.2
330TKFF29003	4x0.50 mm²	5.9	23	61.8
330TKFF29004	5x0.50 mm²	6.1	29	72.6
330TKFF29005	7x0.50 mm²	7.5	40	93.4
330TKFF29006	12x0.50 mm²	8.8	69	147
330TKFF29007	18x0.50 mm²	12	87	216
330TKFF29008	25x0.50 mm²	13.8	120	288
330TKFF29009	34x0.50 mm²	16.7	165	379
330TKFF29010	41x0.50 mm²	18.4	197	435

TK-FF290-MULTICORE CONTROL AND power CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
340TKFF29001	2x1 mm²	6	19	51.7
340TKFF29002	3x1 mm²	6.5	29	62.6
340TKFF29003	4x1 mm²	7	38	75.1
340TKFF29004	5x1 mm²	7.5	48	90.2
340TKFF29005	7x1 mm²	9	67	117
340TKFF29006	12x1 mm²	10.8	116	186
340TKFF29007	18x1 mm²	16	173	272
340TKFF29008	25x1 mm²	17.6	240	315
340TKFF29009	34x1 mm²	21.5	327	493
340TKFF29010	41x1 mm²	24.4	394	577

MAIN FEATURES - SHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
530TKFF29007	2x0.50 mm²	5.3	30	50.1
530TKFF29008	3x0.50 mm²	5.5	39	61.5
530TKFF29009	4x0.50 mm²	6.2	46	83.5
530TKFF29010	5x0.50 mm²	6.5	54	94.7
530TKFF29011	7x0.50 mm²	7.6	70	118
530TKFF29012	12x0.50 mm²	9	106	181
530TKFF29013	18x0.50 mm²	12.6	153	253
530TKFF29014	25x0.50 mm²	14.4	202	330
530TKFF29015	34x0.50 mm²	17.3	277	458
530TKFF29016	41x0.50 mm²	19.2	328	549

MAIN FEATURES - SHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
540TKFF29001	2x1 mm²	6.5	42	58.8
540TKFF29002	3x1 mm²	6.8	56	82.7
540TKFF29003	4x1 mm²	7.4	68	95.3
540TKFF29004	5x1 mm²	8	79	114
540TKFF29005	7x1 mm²	9.4	99	143
540TKFF29006	12x1 mm²	11.5	160	219
540TKFF29007	18x1 mm²	16.6	250	315
540TKFF29008	25x1 mm²	18.2	330	446
540TKFF29009	34x1 mm²	22.8	450	581
540TKFF29010	41x1 mm²	25.4	530	659

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
345TKFF29001	2x1.5 mm²	7	29	68.8
345TKFF29002	3x1.5 mm²	7.3	43	85.0
345TKFF29003	4x1.5 mm²	8.2	58	104
345TKFF29004	5x1.5 mm²	8.8	72	124
345TKFF29005	7x1.5 mm²	10.8	101	162
345TKFF29006	12x1.5 mm²	12.6	173	267
345TKFF29007	18x1.5 mm²	19.8	260	384
345TKFF29008	25x1.5 mm²	21.8	360	529
345TKFF29009	34x1.5 mm²	26.5	490	709
345TKFF29010	41x1.5 mm²	29.8	590	882

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
355TKFF29001	2x2.5 mm²	8.6	48	93.4
355TKFF29002	3x2.5 mm²	9.2	72	117
355TKFF29003	4x2.5 mm²	10	96	145
355TKFF29004	5x2.5 mm²	11	120	175
355TKFF29005	7x2.5 mm²	13.2	168	231
355TKFF29006	12x2.5 mm²	15.7	288	385
355TKFF29007	18x2.5 mm²	24.6	432	554
355TKFF29008	25x2.5 mm²	28	600	781

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
365TKFF29001	2x4 mm²	9.8	77	134
365TKFF29002	3x4 mm²	10.6	116	171
365TKFF29003	4x4 mm²	11.8	154	214
365TKFF29004	5x4 mm²	13	192	263
365TKFF29005	7x4 mm²	15.6	269	355

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
545TKFF29001	2x1.5 mm²	7.5	57	83.9
545TKFF29002	3x1.5 mm²	8	75	105
545TKFF29003	4x1.5 mm²	8.6	91	126
545TKFF29004	5x1.5 mm²	9.2	110	149
545TKFF29005	7x1.5 mm²	11.4	140	192
545TKFF29006	12x1.5 mm²	13.6	240	304
545TKFF29007	18x1.5 mm²	20.8	345	446
545TKFF29008	25x1.5 mm²	22.6	497	608
545TKFF29009	34x1.5 mm²	27.5	650	843
545TKFF29010	41x1.5 mm²	30.2	720	998

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
555TKFF29001	2x2.5 mm²	9.2	100	107
555TKFF29002	3x2.5 mm²	9.8	120	138
555TKFF29003	4x2.5 mm²	10.9	160	167
555TKFF29004	5x2.5 mm²	11.6	190	204
555TKFF29005	7x2.5 mm²	14	261	260
555TKFF29006	12x2.5 mm²	16.8	311	422
555TKFF29007	18x2.5 mm²	25.5	472	635
555TKFF29008	25x2.5 mm²	29	640	911

TK-FF290-MULTICORE CONTROL AND power CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
565TKFF29001	2x4 mm²	10.4	110	134
565TKFF29002	3x4 mm²	11.4	165	193
565TKFF29003	4x4 mm²	12.4	230	238
565TKFF29004	5x4 mm²	13.6	280	288
565TKFF29005	7x4 mm²	16.2	360	385

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
370TKFF29001	4x6 mm²	13.6	230	327
370TKFF29002	5x6 mm²	14.8	288	395
370TKFF29003	7x6 mm²	18.2	403	533

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
380TKFF29001	4x10 mm²	16.8	384	527
380TKFF29002	5x10 mm²	18.8	480	645
380TKFF29003	7x10 mm²	23.5	672	882

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
385TKFF29001	4x16 mm²	20.4	615	857
385TKFF29002	5x16 mm²	22.7	768	1041
385TKFF29003	7x16 mm²	28	1076	1385

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
390TKFF29001	4x25 mm²	24.2	960	1315
393TKFF29001	4x35 mm²	28	1344	1865
395TKFF29001	4x50 mm²	33.2	1920	2866
397TKFF29001	4x70 mm²	39.6	2688	3561
398TKFF29001	4x95 mm²	47.6	3650	4713

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
570TKFF29001	4x6 mm²	14.2	282	352
570TKFF29002	5x6 mm²	15.5	340	408
570TKFF29003	7x6 mm²	19.2	450	573

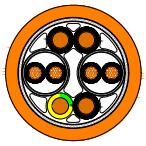
MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
580TKFF29001	4x10 mm²	17.6	485	566
580TKFF29002	5x10 mm²	19.6	562	697
580TKFF29003	7x10 mm²	24.5	796	985

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
585TKFF29001	4x16 mm²	21.5	723	858
585TKFF29002	5x16 mm²	23.5	889	1086
585TKFF29003	7x16 mm²	29	1240	1439

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
590TKFF29001	4x25 mm²	25	1090	1442
593TKFF29001	4x35 mm²	29	1536	2046
595TKFF29001	4x50 mm²	34.2	2381	3073
597TKFF29001	4x70 mm²	40.5	2921	3801
598TKFF29001	4x95 mm²	48.4	3950	4992

TK-FF290-SERVOMOTOR POWER CABLE SHIELDED 0.6/1 kV

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered U/L1/C/L+, V/L2, W/L3/D/L-, Yellow/Green
Pairs Identification (where request)	Black - White or Black Numbered 5÷6 and Black Numbered 7÷8
Pairs Shield (where request)	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V Cross-sectional area 1.0 mm² (AWG18)
Test voltage	3000 V a.c. Cross-sectional area 1.0 mm² (AWG18)
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5 – 16 mm² / Dynamic Installation) 10 x Ø (25 – 50 mm² / Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V, Cross-sectional area ≥ 1.0 mm² (AWG18)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

According to NFPA 79-2018-Chapter 12.9

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SERVOMOTOR POWER CABLES SHIELDED				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
545TKFF29013	(4G1.5)H2	8.7	83	131
555TKFF29009	(4G2.5)H2	10.8	130	198
565TKFF29006	(4G4)H2	12.2	193	276
570TKFF29004	(4G6)H2	14.2	275	376
580TKFF29004	(4G10)H2	17.6	450	567
585TKFF29004	(4G16)H2	21.2	720	885
590TKFF29002	(4G25)H2	25	1003	1314
593TKFF29002	(4G35)H2	28.8	1514	2146
595TKFF29002	(4G50)H2	33.9	2167	2992

MAIN FEATURES - SERVOMOTOR POWER CABLES SHIELDED				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
545TKFF29016	[4G1.5 + (2x1.5)H2]H2	11.6	149	221
555TKFF29012	[4G2.5 + (2x1.5)H2]H2	13	193	264
565TKFF29009	[4G4 + (2x1.5)H2]H2	14.7	255	315
570TKFF29005	[4G6 + (2x1.5)H2]H2	16.2	339	480
580TKFF29005	[4G10 + (2x1.5)H2]H2	19.7	526	774
585TKFF29005	[4G16 + (2x1.5)H2]H2	23.2	773	1043
590TKFF29003	[4G25 + (2x1.5)H2]H2	27.4	1190	1567
593TKFF29003	[4G35 + (2x1.5)H2]H2	31	1590	1978
595TKFF29003	[4G50 + (2x1.5)H2]H2	34.5	2240	2766

MAIN FEATURES - SERVOMOTOR POWER CABLES SHIELDED				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
540TKFF29015	[4G1 + 2x(2x0.75)H2]H2	11.8	137	216
545TKFF29015	[4G1.5 + 2x(2x0.75)H2]H2	12.4	155	259
555TKFF29013	[4G2.5 + 2x(2x1)H2]H2	14.2	220	320
565TKFF29008	[4G4 + (2x1) + (2x1.5)H2]H2	16.3	293	439
570TKFF29006	[4G6 + (2x1) + (2x1.5)H2]H2	18	372	594
580TKFF29006	[4G10 + (2x1) + (2x1.5)H2]H2	21.8	570	845
585TKFF29006	[4G16 + 2x (2x1.5)H2]H2	25.5	830	1231
590TKFF29004	[4G25 + 2x (2x1.5)H2]H2	29.8	1213	1615
593TKFF29004	[4G35 + 2x (2x1.5)H2]H2	32.2	1598	2022

TK-FF290-ENCODER AND RESOLVER CABLE

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin and/or Polyester (UL-CSA Standards)
Core identification	More informations are available upon request
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - HEIDENHAIN				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
514TKFF29001	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	70	102
514TKFF29002	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.5	66	112
514TKFF29003	(4x2x0.14 + 4x0.50)H2	8.6	51	106
514TKFF2901N	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	70	102
514TKFF2902N	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.5	66	112
514TKFF2903N	(4x2x0.14 + 4x0.50)H2	8.6	51	106

Note : Codes ending with letter N have a Black Sheath

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - B&R				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
514TKFF29012	(5x2x0.14 + 2x0.50)H2	7.9	42	73.2
518TKFF29030	(3x2xAWG24)H2	6.6	27	52.4

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - ELAU				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF29026	(3x2x0.25 + 2x0.50) H2	8.2	47	88
522TKFF29027	3x(2x0.25) H2	8.5	74	150

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - CONTROL TECHNIQUES				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
525TKFF29025	[(2x0.34)H + 6x2x0.34 + 2x1]H2	11	102	172
512TKFF29002	(2x2xAWG26)H2	5.6	19	45

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - LENZE				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
514TKFF29007	3x(2x0.14)H2 + (2x0.50)H2	9.4	47	152
514TKFF29008	4x(2x0.14)H2 + (2x1)H2	11.2	70	229

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - YASKAWA				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
525TKFF29026	(2x2x0.34)H2	7	36	83.3

TK-FF290-ENCODER AND RESOLVER CABLE

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - BOSCH REXROTH				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF29029	(4x2x0.25 + 2x0.50)H2	8.7	65	11.2
514TKFF29009	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.5	93	165
522TKFF29030	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKFF29019	(9x0.50)H2	8.8	75	148
522TKFF2029A	(4x2x0.25 + 2x0.50)H2	8.7	65	111
514TKFF2909A	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.7	93	165
522TKFF2030A	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKFF2019A	(9x0.50)H2	8.8	75	148

Note : Codes ending with letter A have a Orange Sheath

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - SIEMENS				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF29012	(12x0.25)H2	7.2	48	82.3
526TKFF29001	(4x2x0.38 + 4x0.50)H2	9.2	71	130
517TKFF29001	(8x2x0.18)H2	8	54	85
517TKFF29006	(4x2x0.18)H2	6.5	28	45
514TKFF29010	[3x(2x0.14)H1 + 4x0.14 + 4x0.25 + 2x0.50]H2	9.8	76	139
514TKFF29011	[3x(2x0.14)H1 + 4X0.14 + 2x0.50]H2	8.6	66	101
512TKFF29003	(2x2xAWG26 + 2xAWG22)H2 Drive Cliq	6.8	33	71
518TKFF29031	(2x2xAWG24 + 2xAWG22)H2 Drive Cliq	7.2	36	74

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - FANUC				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
517TKFF29002	(4x2x0.18 + 2x0.50)H2	7.7	32.9	70.5
517TKFF29003	(3x2x0.18 + 6x0.50)H2	8.4	63	94
517TKFF29004	(3x2x0.18 + 6x1)H2	8.7	89	140
517TKFF29005	(5x2x0.18 + 6x0.50)H2	8.7	71	94
530TKFF29020	(2x0.18 + 5x0.5)H2	7.5	48.6	143
530TKFF29021	(2x2x0.18 + 5x0.5)H2	7.7	44.5	84.4
518TKFF29032	(10x2xAWG24)H2	11.5	60	121
538TKFF2014V	(10x2xAWG28)H2	9.2	46	66

MAIN FEATURES - RESOLVER SIGNAL TRANSMISSION				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF29031	[3x(2x0.25)H2]H2	8.5	74	150
522TKFF29032	[4x(2x0.25)H2]H2	9	85	120
522TKFF29033	[8x(2x0.25)H2]H2	13.8	139	206
525TKFF29027	[4x(2x0.34)H2]H2	11.2	97	145
525TKFF29005	[5x(2x0.34)H2]H2	12.2	113	166

The references (Heidenhain, B&R, Elau, Control Techniques, Lenze, Yaskawa, Bosch, Siemens, Fanuc are registered trademarks) are listed for comparison purposes only.

TK-FF290 BUS CABLE – PROFIBUS L2 DP-FIP

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 30 pF/m
Characteristic impedance	150 Ω ± 15 Ω
Transmission speed	12 Mbit/s with maximum length 200 m 0.6 Kbit/s with maximum length 1000 m
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES – PROFIBUS L2 DP-FIP				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
524TKFF29023	(1x2x0.34 mm²)HH2	8.3	24	70.4
518TKFF29023	(1x2x0.25 mm²)HH2	7.8	20	67.1
524TKFF29023	1x2x0.34 mm²		Green - Red	
518TKFF29023	1x2x0.25 mm²		Green - Red	

TK-FF290 BUS CABLE – canopen – canbus

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	More informations are available upon request
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	1000 Kbit/s with maximum length 40m 500 Kbit/s with maximum length 300m 100 Kbit/s with maximum length 600m 50 Kbit/s with maximum length 1000m
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES – CANOPEN - CANBUS				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
525TKFF29024	(2x0.34)H2	6	25	50
525TKFF29023	(2x2x0.34)H2	7.4	36	68.5
525TKFF29028	(1x4x0.34)Q/H2	7.5	36	68.5
530TKFF29017	(2x0.50)H2	6.8	29	69.1
530TKFF29018	(2x2x0.50)H2	8.8	48	92.7
525TKFF29024	2x0.34	(White – Brown)		
525TKFF29023	2x2x0.34	(White – Brown) – (Green – Yellow)		
525TKFF29028	1x4x0.34	White – Green – Brown – Yellow		
530TKFF29017	2x0.50	(White – Brown)		
530TKFF29018	2x2x0.50	(White – Brown) – (Green – Yellow)		

TK-FF290 BUS CABLE – devicenet drop and trunk

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin and Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic on each pairs
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 50 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 200m 250 Kbit/s with maximum length 250m 125 Kbit/s with maximum length 500m
Temperature range	-20°C ÷ +90°C (Static Installation) -5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - DEVICENET				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
518TKFF29024	[(2xAWG24)H + (2xAWG22)H]H2 - Drop	7.2	31	74.7
538TKFF29013	[(2xAWG18)H + (2xAWG15)H]H2 - Trunk	11	103	179
518TKFF29024	2xAWG24 - Data 2xAWG22 - Power		(Blue – White) (Red – Black)	
538TKFF29013	2xAWG18 - Data 2xAWG15 - Power		(Blue – White) (Red – Black)	

TK-FF290 BUS CABLE – interbus

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 m - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and/or Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 400 m
Temperature range	- 20°C ÷ +90°C (Static Installation) - 5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - INTERBUS				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF29034	(3x2x0.22)HH2	7	22	61.7
522TKFF29035	(3x2x0.22 + 3G1)HH2	8.4	54	96.6
522TKFF29034	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
522TKFF29035	3x2x0.22 3G1	(White-Brown) – (Green-Yellow) – (Grey-Pink) Blue – Red – Yellow/Green		

TK-FF290 ethernet – profinet/ethercat category 5e

TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 · Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Inner sheath	Only Profinet/Ethernet version
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V
Test voltage	1000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	100 Mbit/s with maximum length 100m 10 Mbit/s with maximum length 500m
Temperature range	- 20°C ÷ +90°C (Static Installation) - 5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 5E				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
518TKFF29025	Ethernet Category 5E (2x2xAWG24)HH2	6.3	21	50
518TKFF29026	Ethernet Category 5E (4x2xAWG24)HH2	72	33	68
512TKFF29001	Ethernet Category 5E (4x2xAWG26)HH2	6.8	26	53
524TKFF29039	Ethercat/Profinet Category 5E (4xAWG22)HH2	6.5	31	65
518TKFF29040	Ethercat/Profinet Category 5E (4xAWG24)HH2	5.5	22	46
518TKFF29025	2x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange)		
518TKFF29026	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF29001	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
524TKFF29039	2xAWG22	White - Yellow - Blue - Orange		
518TKFF29040	4xAWG24	White - Yellow - Blue - Orange		

TK-FF290 ethernet Category 6

Cables for dynamic APPLICATIONS on drag chain low performance - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758

CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600 V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	< 50 pF/m
Characteristic impedance	100 Ω
Temperature range	- 20°C ÷ +90°C (Static Installation) - 5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 6				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
518TKFF29041	Ethernet Category 6 (4x2xAWG24)HH2	7.6	34	70
512TKFF29011	Ethernet Category 6 (4x2xAWG26)HH2	7.2	27	63
518TKFF29041	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF29011	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		

TK-FF290 ethernet Category 7

Cables for dynamic APPLICATIONS on drag chain low performance - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758

CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic Tape
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	PVC Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600 V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	< 50 pF/m
Characteristic impedance	100 Ω
Temperature range	- 20°C ÷ +90°C (Static Installation) - 5°C ÷ +90°C (Dynamic Installation)
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	180 m/min
Maximum Acceleration	10 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 7				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
518TKFF29042	Ethernet Category 7 [4x(2xAWG24)H]HH2	10.6	42	108
512TKFF29012	Ethernet Category 7 [4x(2xAWG26)H]HH2	9.7	32	90
518TKFF29042	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF29012	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		

These images are for illustrative purposes.

TK - FF390 FOR HIGH DYNAMIC APPLICATION, PUR OIL RESISTANT, UL/CSA APPROVALS, HALOGEN FREE

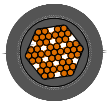
Product description and application

Single-core and multicore cables for dynamic installations built in compliance with UL and CSA standards to satisfy the highest performance levels required by automation system and machine tool makers and for some applications aboard industrial robots. The most modern materials and features are used in TK FF390® to obtain small dimensions, allowing for use in bending-torsion, with the best price/performance ratio. Use in high dynamic installations is guaranteed with temperatures down to -40°C.

The outer sheath in Polyurethane provides good resistance to the most aggressive cutting and industrial oils, chemical substances typically found in industrial environments, and UV rays.

TK-FF390-SINGLE CORE UNSHIELDED AND SHIELDED CABLE

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black (other colours available upon request)
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Black RAL 9005 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V
Test voltage	3000 V a.c.
Temperature range	-40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V -Style 11773 – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	UL 1581 – VDE 0472 part 803 A/B – –
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	EN 50267-2-1 – IEC 60754-1

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SINGLE CORE 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal· mm	Copper weight · Kg/km	Cable weight · Kg/km
270TKFF390N0N	1x6 mm²	7	58	96.6
280TKFF390N0N	1x10 mm²	8.3	96	148
285TKFF390N0N	1x16 mm²	9.6	154	216
290TKFF390N0N	1x25 mm²	11.2	240	321
293TKFF390N0N	1x35 mm²	12.7	336	454
295TKFF390N0N	1x50 mm²	15	480	625
297TKFF390N0N	1x70 mm²	16.6	672	799
298TKFF390N0N	1x95 mm²	19.4	912	1094
299TKFF390N0N	1x120 mm²	22.6	1152	1345
29DTKFF390N0N	1x150 mm²	23.8	1440	1719
29FTKFF390N0N	1x185 mm²	25.3	1776	2022
29ITKFF390N0N	1x240 mm²	28.5	2304	2514

MAIN FEATURES - SINGLE CORE SHIELDED 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
570TKFF390N0N	(1x6 mm²)H2	7.5	78	121.4
580TKFF390N0N	(1x10 mm²)H2	8.7	122	179
585TKFF390N0N	(1x16 mm²)H2	10.2	181	253
590TKFF390N0N	(1x25 mm²)H2	11.8	272	366
593TKFF390N0N	(1x35 mm²)H2	13.4	401	495
595TKFF390N0N	(1x50 mm²)H2	15.6	579	682
597TKFF390N0N	(1x70 mm²)H2	17.4	766	869
598TKFF390N0N	(1x95 mm²)H2	20.4	1009	1201
599TKFF390N0N	(1x120 mm²)H2	23.5	1272	1489
59DTKFF390N0N	(1x150 mm²)H2	24.6	1705	1722
59FTKFF390N0N	(1x185 mm²)H2	26.3	2095	2283
59ITKFF390N0N	(1x240 mm²)H2	29.5	2510	2697

TKFF390-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	DIN 47100
Overall Shield (optional)	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V
Test voltage	2000 V a.c.
Temperature range	-40°C ÷ +90°C

TK-FF390

≤ 12 conductors : concentric conductors › 12 conductors : in group

Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

TK-FF390L From 16 to 25 conductors in concentric layers

Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	240 m/min
Maximum Acceleration	30 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V - Style 21209 – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area ≤ 0,50 mm² (AWG21)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
322TKFF39001	2x0.25 mm²	4.2	4.8	21.4
322TKFF39002	3x0.25 mm²	4.5	7.5	25
322TKFF39003	4x0.25 mm²	4.8	10	29.4
322TKFF39004	5x0.25 mm²	5.1	12.5	34.1
322TKFF39005	7x0.25 mm²	5.9	17.5	42.5
322TKFF39006	12x0.25 mm²	7	29	56
322TKFF39007	16x0.25 mm²	7.6	37	82
322TKFF39008	18x0.25 mm²	9.8	45	90.2
322TKFF39009	25x0.25 mm²	10.8	63	119
322TKFF39010	30x0.25 mm²	12	72	107
322TKFF39011	36x0.25 mm²	13.2	86	163

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
325TKFF39001	2x0.35 mm²	4.4	6.7	27
325TKFF39002	3x0.35 mm²	4.6	10	32
325TKFF39003	4x0.35 mm²	5	13	38
325TKFF39004	5x0.35 mm²	5.4	17	44
325TKFF39005	7x0.35 mm²	6.4	23.5	55
325TKFF39006	12x0.35 mm²	7.4	41	86
325TKFF39007	16x0.35 mm²	9.7	54	110
325TKFF39008	18x0.35 mm²	10.4	61	120
325TKFF39009	25x0.35 mm²	11.8	84	164
325TKFF39010	30x0.35 mm²	12.8	101	186
325TKFF39011	36x0.35 mm²	14.4	121	221

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39001	2x0.25mm²	4.6	15	23
522TKFF39002	3x0.25mm²	4.9	19	33.4
522TKFF39003	4x0.25mm²	5.2	21	39.2
522TKFF39004	5x0.25mm²	5.5	29	45.1
522TKFF39005	7x0.25mm²	6.3	39	61
522TKFF39006	12x0.25mm²	7.4	54	90
522TKFF39007	16x0.25mm²	8.2	67	106
522TKFF39008	18x0.25mm²	10.4	78	117
522TKFF39009	25x0.25mm²	11.5	101	152
522TKFF39010	30x0.25mm²	12.6	105	170
522TKFF39011	36x0.25mm²	13.8	118	198

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF39001	2x0.35mm²	4.8	16	34.6
525TKFF39002	3x0.35mm²	5	20	40.2
525TKFF39003	4x0.35mm²	5.4	25	48
525TKFF39004	5x0.35mm²	5.8	29	55.2
525TKFF39005	7x0.35mm²	6.8	38	68
525TKFF39006	12x0.35mm²	7.8	65	112
525TKFF39007	16x0.35mm²	9	83	137
525TKFF39008	18x0.35mm²	11	88	149
525TKFF39009	25x0.35mm²	12.4	122	195
525TKFF39010	30x0.35mm²	13.4	142	221
525TKFF39011	36x0.35mm²	15	165	257

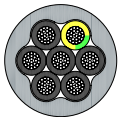
TKFF390-MULTICORE/MULTIPAIR CONTROL AND SIGNAL CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39015	2x2x0.25 mm²	6.3	23	45.7
522TKFF39016	3x2x0.25 mm²	6.7	28	55.1
522TKFF39017	4x2x0.25 mm²	7.3	38	72.2
522TKFF39018	6x2x0.25 mm²	8.6	52	96.2
522TKFF39019	8x2x0.25 mm²	9.8	64	116
522TKFF39020	10x2x0.25 mm²	10.8	75	137
522TKFF39021	12x2x0.25 mm²	11.2	89	156
522TKFF39022	16x2x0.25 mm²	12.4	107	189

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
525TKFF39015	2x2x0.35 mm²	7	28	54.7
525TKFF39016	3x2x0.35 mm²	7.3	42	76.5
525TKFF390017	4x2x0.35 mm²	7.9	49	88.7
525TKFF39018	6x2x0.35 mm²	9.4	68	119
525TKFF39019	8x2x0.35 mm²	10.6	83	143
525TKFF39020	10x2x0.35 mm²	12	102	173
525TKFF39021	12x2x0.35 mm²	12.6	120	198
525TKFF39022	16x2x0.35 mm²	14	147	257

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND SIGNAL				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
530TKFF39001	2x2x0.50mm²	7.8	45	79.3
530TKFF39002	3x2x0.50mm²	8.1	58	103
530TKFF39003	4x2x0.50mm²	8.5	73	118
530TKFF39004	6x2x0.50mm²	10.4	101	160
530TKFF39005	8x2x0.50mm²	11.5	124	194
530TKFF39006	10x2x0.50mm²	13.5	150	236

TKFF390-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED



TKFF290-SERIES CABLES FOR DYNAMIC APPLICATIONS, PVC OIL RESISTANT, UL/CSA APPROVAL

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered + Yellow/Green
Overall Shield (optional)	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Grey RAL 7040 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V Cross-sectional area 0.5mm² (AWG21) ÷ 1.0mm² (AWG18) 1000 V Cross-sectional area > 1.0mm² (AWG18)
Test voltage	2000 Va.c. Cross-sectional area 0.5mm² (AWG21) ÷ 1.0mm² (AWG18) 3000 Va.c. Cross-sectional area > 1.0mm² (AWG18)
Temperature range	-40°C ÷ +90°C
	TK-FF390 ≤ 12 conductors : concentric conductors > 12 conductors : in group
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5÷16mm² / Dynamic installation) 10 x Ø (25÷50mm² / Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office
TK-FF390L	From 16 to 25 conductors in concentric layers
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5÷16mm² / Dynamic Installation) 10 x Ø (25÷50mm² / Dynamic Installation)
Maximum Speed	240 m/min
Maximum Acceleration	30 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V -Style 21209 – CSA AWM I/II A/B 90°C 300 V, Cross-sectional area 0,5 mm² (AWG21) ÷ 1,0mm² (AWG18) UL 90°C 1000 V - Style 21209 – CSA AWM I/II A/B 90°C 1000 V, Cross-sectional area > 1,0mm² (AWG18)
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Water Resistance	UL 1581 – IEC 60811
According to NFPA 79-2018-Chapter 12.9	
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
330TKFF39001	2x0.50 mm²	5.2	10	42.8
330TKFF39002	3x0.50 mm²	5.5	15	51.2
330TKFF39003	4x0.50 mm²	5.9	20	61.8
330TKFF39004	5x0.50 mm²	6.1	24	72.6
330TKFF39005	7x0.50 mm²	7.5	34	93.4
330TKFF39006	12x0.50 mm²	8.8	58	147
330TKFF39007	18x0.50 mm²	12	87	216
330TKFF39008	25x0.50 mm²	13.8	120	288
330TKFF39009	34x0.50 mm²	16.7	164	379
330TKFF39010	41x0.50 mm²	18.4	197	435
330TKFF300L1	18x0.50 mm²	10	87	184
330TKFF300L2	25x0.50 mm²	12	120	245

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
340TKFF39001	2x1mm²	6	19	51.7
340TKFF39002	3x1mm²	6.5	29	62.6
340TKFF39003	4x1mm²	7.0	38	75.1
340TKFF39004	5x1mm²	7.5	48	90.2
340TKFF39005	7x1mm²	9	67	117
340TKFF39006	12x1mm²	10.8	116	186
340TKFF39007	18x1mm²	16	173	272
340TKFF39008	25x1mm²	17.6	240	315
340TKFF39009	34x1mm²	21.5	327	493
340TKFF39010	41x1m²	24.4	394	577
340TKFF390L1	18x1mm²	12.6	173	231
340TKFF390L2	25x1mm²	15.8	240	268

MAIN FEATURES - SHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
530TKFF39007	2x0.50mm²	5.3	30	50.1
530TKFF39008	3x0.50mm²	5.5	39	61.5
530TKFF39009	4x0.50mm²	6.2	46	83.5
530TKFF39010	5x0.50mm²	6.5	54	94.7
530TKFF39011	7x0.50mm²	7.6	70	118
530TKFF39012	12x0.50mm²	9	105	181
530TKFF39013	18x0.50mm²	12.6	153	253
530TKFF39014	25x0.50mm²	14.4	202	330
530TKFF39015	34x0.50mm²	17.3	277	458
530TKFF39016	41x0.50mm²	19.2	328	549
530TKFF390L1	18x0.50mm²	10.6	153	215
530TKFF390L2	25x0.50mm²	12.8	202	280

TKFF390-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
540TKFF39001	2x1mm²	6.5	42	58.8
540TKFF39002	3x1mm²	6.8	56	82.7
540TKFF39011	4x1m²	7.4	68	95.3
540TKFF39004	5x1mm²	8	79	114
540TKFF39005	7x1mm²	9.4	99	143
540TKFF39006	12x1mm²	11.5	175	219
540TKFF39007	18x1mm²	16.6	196	315
540TKFF39008	25x1mm²	18.2	285	446
540TKFF39009	34x1mm²	22.8	450	581
540TKFF39010	41x1mm²	25.4	530	659
540TKFF390L1	18x1mm²	13.2	240	268
540TKFF390L2	25x1mm²	16.6	285	380

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
345TKFF39001	2x1.5mm²	7	29	68.8
345TKFF39002	3x1.5mm²	7.3	43	85
345TKFF39003	4x1.5mm²	8.2	58	104
345TKFF39004	5x1.5mm²	8.8	72	124
345TKFF39005	7x1.5mm²	10.8	101	162
345TKFF39006	12x1.5mm²	12.6	173	267
345TKFF39007	18x1.5mm²	19.8	260	384
345TKFF39008	25x1.5mm²	21.8	360	529
345TKFF39009	34x1.5mm²	26.5	490	709
345TKFF39010	41x1.5mm²	29.8	590	882
345TKFF390L1	18x1.5mm²	15.2	260	326
345TKFF390L2	25x1.5mm²	19.2	360	450

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
355TKFF39001	2x2.5mm²	8.6	48	93.4
355TKFF39002	3x2.5mm²	9.2	72	117
355TKFF39003	4x2.5mm²	10	96	145
355TKFF39004	5x2.5mm²	11	120	175
355TKFF39005	7x2.5mm²	13.2	168	231
355TKFF39006	12x2.5mm²	15.7	288	385
355TKFF39007	18x2.5mm²	24.6	432	554
355TKFF39008	25x2.5mm²	28	600	781
355TKFF300L1	18x2.5mm²	19	432	471
355TKFF300L2	25x2.5mm²	24.5	600	750

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
365TKFF39001	2x4mm²	9.8	77	134
365TKFF39002	3x4mm²	10.6	116	171
365TKFF39003	4x4mm²	11.8	154	214
365TKFF39004	5x4mm²	13	192	263
365TKFF39005	7x4mm²	15.6	269	355

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
370TKFF39001	4x6mm²	13.6	230	327
370TKFF39002	5x6mm²	14.8	288	395
370TKFF39003	7x6mm²	18.2	403	533

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
380TKFF39001	4x10mm²	16.8	354	527
380TKFF39002	5x10mm²	18.8	480	645
380TKFF39003	7x10mm²	23.5	672	882

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
385TKFF39001	4x16mm²	20.4	615	857
385TKFF39002	5x16mm²	22.7	768	1041
385TKFF39003	7x16mm²	28	1076	1385

MAIN FEATURES - UNSHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
390TKFF39001	4x25mm²	24.2	960	1315
393TKFF39001	4x35mm²	28	1344	1865
395TKFF39001	4x50mm²	33.2	1920	2866
397TKFF39001	4x70mm²	39.6	2688	3561
398TKFF39001	4x95mm²	47.6	3651	4713

TKFF390-MULTICORE CONTROL AND POWER CABLE UNSHIELDED AND SHIELDED

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
545TKFF39001	2x1.5mm²	7.5	57	83.9
545TKFF39018	3x1.5mm²	8	75	105
545TKFF39015	4x1.5mm²	8.6	91	126
545TKFF39004	5x1.5mm²	9.2	110	149
545TKFF39005	7x1.5mm²	11.4	140	192
545TKFF39006	12x1.5mm²	13.6	240	304
545TKFF39007	18x1.5mm²	20.8	345	446
545TKFF39008	25x1.5mm²	22.6	497	608
545TKFF39009	34x1.5mm²	27.5	650	843
545TKFF39010	41x1.5mm²	30.2	720	998
545TKFF390L1	18x1.5mm²	15.8	345	380
545TKFF390L2	25x1.5mm²	19.8	497	517

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
555TKFF39013	2x2.5mm²	9.2	100	107
555TKFF39010	3x2.5mm²	9.8	120	138
555TKFF39011	4x2.5mm²	10.9	160	167
555TKFF39004	5x2.5mm²	11.6	190	204
555TKFF39005	7x2.5mm²	14	261	260
555TKFF39006	12x2.5mm²	16.8	311	422
555TKFF39007	18x2.5mm²	25.5	472	636
555TKFF39008	25x2.5mm²	29	640	911
555TKFF390L1	18x2.5mm²	20	472	635
555TKFF390L2	25x2.5mm²	25.3	640	911

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
565TKFF39001	2x4mm²	10.4	110	134
565TKFF39002	3x4mm²	11.4	165	193
565TKFF39016	4x4mm²	12.4	230	238
565TKFF39017	5x4mm²	13.6	280	288
565TKFF39005	7x4mm²	16.2	360	385

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
570TKFF39005	4x6mm²	14.2	282	352
570TKFF39006	5x6mm²	15.5	340	408
570TKFF39007	7x6mm²	19.2	450	573

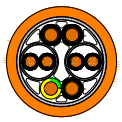
MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
580TKFF39001	4x10mm²	17.6	485	566
580TKFF39002	5x10mm²	19.6	562	697
580TKFF39004	7x10mm²	24.5	796	985

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
585TKFF39001	4x16mm²	21.5	723	858
585TKFF39002	5x16mm²	23.5	889	1086
585TKFF39004	7x16mm²	29	1240	1439

MAIN FEATURES - SHIELDED MULTICORE CONTROL AND POWER CABLES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
590TKFF39001	4x25mm²	25	1090	1442
593TKFF39001	4x35mm²	29	1536	2046
595TKFF39001	4x50mm²	34.2	2381	3073
597TKFF39001	4x70mm²	40.5	2921	3801
598TKFF39001	4x95mm²	48.4	3950	4992

TKFF390-SERVOMOTOR POWER CABLE SHIELDED 0.6/1 kV

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered U/L1/C/L+, V/L2, W/L3/D/L-, Yellow/Green
Pairs Identification (where request)	One pair: black, white. Two pairs: Black Numbered 5÷6 and Black Numbered 7÷8
Pairs Shield (where request)	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V Cross-sectional area 1.0mm² (AWG18)
Test voltage	4000V a.c. Cross-sectional area 1.0mm² (AWG18)
Temperature range	-40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5 – 16mm² / Dynamic Installation) 10 x Ø (25 – 50mm² / Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	25 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V - Style 21209 – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

According to NFPA 79-2018-Chapter 12.9

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SERVO CABLES 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
545TKFF39001	(4G1.5)H2	8.7	83	131
555TKFF39001	(4G2.5)H2	10.8	130	198
565TKFF39001	(4G4)H2	12.2	193	276
570TKFF39001	(4G6)H2	14.2	282	376
580TKFF39001	(4G10)H2	17.6	450	567
585TKFF39001	(4G16)H2	21.2	720	885
590TKFF39001	(4G25)H2	25	1003	1314
593TKFF39001	(4G35)H2	28.8	1514	2146
595TKFF39001	(4G50)H2	33.9	2167	2992

MAIN FEATURES - SERVO CABLE 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
545TKFF39016	[4G1.5 + (2x1.5)H2]H2	11.6	149	221
555TKFF39009	[4G2.5 + (2x1.5)H2]H2	13	193	264
565TKFF39004	[4G4 + (2x1.5)H2]H2	14.7	255	315
570TKFF39002	[4G6 + (2x1.5)H2]H2	16.2	339	480
580TKFF39002	[4G10 + (2x1.5)H2]H2	19.7	526	774
585TKFF39002	[4G16 + (2x1.5)H2]H2	23.2	773	1043
590TKFF39002	[4G25 + (2x1.5)H2]H2	27.4	1190	1567
593TKFF39002	[4G35 + (2x1.5)H2]H2	31	1590	1978
595TKFF39002	[4G50 + (2x1.5)H2]H2	34.5	2240	2766

MAIN FEATURES - SERVO CABLES 90°C 1000 V				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
540TKFF39003	[4G1 + 2x(2x0.75)H2]H2	11.8	137	216
545TKFF39003	[4G1.5 + 2x(2x0.75)H2]H2	12.4	155	259
555TKFF39012	[4G2.5 + 2x(2x1)H2]H2	14.2	220	320
565TKFF39003	[4G4 + (2x1) + (2x1.5)H2]H2	16.3	293	439
570TKFF39003	[4G6 + (2x1) + (2x1.5)H2]H2	18	372	594
580TKFF39003	[4G10 + (2x1) + (2x1.5)H2]H2	21.8	570	845
585TKFF39003	[4G16 + 2x (2x1.5)H2]H2	25.5	830	1231
590TKFF39003	[4G25 + 2x (2x1.5)H2]H2	29.8	1213	1615
593TKFF39003	[4G35 + 2x (2x1.5)H2]H2	31.2	1598	2022

HYBRID SERVO CABLE SHIELDED 0.6/1 kV

CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black Numbered U/L1/C/L+, V/L2, W/L3/D/L-, Yellow/Green
Pairs Identification (where request)	One pair: blue, white. Two pairs: black, white and blue, white
Pairs Shield (where request)	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Orange RAL 2003 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V
Test voltage	4000V a.c.
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (1.5 – 16mm² / Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	25 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V - Style 21209 – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

...guaranteed up to 100 m...

MAIN FEATURES - HIPERFACE DSL				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
540TKFF39D02	[4G1+(2xAWG22)H2/H]H2	10.6	93	163
545TKFF39D02	[4G1.5+(2xAWG22)H2/H]H2	11.2	113	194
555TKFF39D02	[4G2.5+(2xAWG22)H2/H]H2	12.6	161	253
565TKFF39D02	[4G4+(2xAWG22)H2/H]H2	14.1	222	325
530TKFF39D01	[4G0.50+(2x0.50)H2+(2xAWG22)H2/H]H2	11.3	100	178
540TKFF39D01	[4G1+(2x0.75)H2+(2xAWG24)H2/H]H2	11.6	127	209
540TKFF39D03	[4G1+(2x0.75)H2+(2xAWG22)H2/H]H2	11.6	124	215
545TKFF39D01	[4G1.5+(2x1)H2+(2xAWG22)H2/H]H2	13.2	155	255
555TKFF39D01	[4G2.5+(2x1) H2 +(2xAWG22)H2/H]H2	14	198	305
565TKFF39D01	[4G4+(2x1)H2+(2xAWG22)H2/H]H2	15.8	265	388
570TKFF39D01	[4G6+(2x1)H2+(2xAWG22)H2/H]H2	17.8	336	481
580TKFF39D01	[4G10+(2x1.5)H2+(2xAWG22)H2/H]H2	21.	532	736
585TKFF39D01	[4G16+(2x1.5)H2+(2xAWG22)H2/H]H2	24	776	1099

MAIN FEATURES - IndraDyn S*				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
535TKFF39054	[4G0.75+(2x0.5)H2+(4xAWG24)H2/H/H2/H]H2	11.5	115	190
545TKFF39192	[4G1.5+(2x0.75)H2+(4xAWG24)H2/H/H2/H]H2	13.3	153	252
555TKFF39139	[4G2.5+(2x1)H2+(4xAWG24)H2/H/H2/H]H2	14	201	309

MAIN FEATURES - S210*				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
524TKFF39069	[4G0.34+(2x0.34)H2+(4x0.20)H/H2]H2	9.5	75	126
535TKFF39039	[4G0.75+(2x0.5)H2+(4x0.20)H/H2]H2	10.3	101	157
545TKFF39191	[4G1.5+(2x1.5)H2+(4x0.20)H/H2]H2	12.5	168	251
555TKFF39159	[4G2.5+(2x1.5)H2+(4x0.20)H/H2]H2	13.5	210	298

MAIN FEATURES - EnDat2.2*				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight . Kg/km
545TKFF39193	[4G1.5+(2x0.75)H2+(2x2x0.15+2x0.3)H/H2]H2	12.8	160	246
555TKFF39161	[4G2.5+(2x1)H2+(2x2x0.15+2x0.3)H/H2]H2	14.4	208	310
565TKFF39099	[4G4+(2x1)H2+(2x2x0.15+2x0.3)H/H2]H2	15.8	270	390

TKFF390-ENCODER AND RESOLVER CABLE

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin and/or Polyester (UL-CSA Standards)
Core identification	More informations are available upon request
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC - 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	25 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V -Style 21209 – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V -Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - HEIDENHAIN				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
514TKFF39001	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	70	102
514TKFF39002	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.9	66	124
514TKFF39003	(4x2x0.14 + 4x0.50)H2	8.6	51	106
514TKFF3901N	[4x2x0.14 + (4x0.14)H1 + 4x0.5]H2	8.6	70	102
514TKFF3902N	[3x(2x0.14)H1 + 2x(0.5)H1]H2	8.9	66	124
514TKFF3903N	(4x2x0.14 + 4x0.50)H2	8.6	51	106

Note : Codes ending with letter N have a Black Sheath

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - B&R				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
514TKFF39012	(5x2x0.14 + 2x0.50)H2	7.9	42	73.2
518TKFF39026	(3x2xAWG24)H2	6.6	27	52.4

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - ELAU				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39024	(3x2x0.25 + 2x0.50)H2	8.2	47	88
522TKFF39025	3x(2x0.25)H2	8.5	74	150

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - CONTROL TECHNIQUES				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF39023	[(2x0.34)H + 6x2x0.32 + 2 x1)]H2	11	102	172
512TKFF39002	(2x2xAWG26) H2	5.6	19	45

TKFF390-ENCODER AND RESOLVER CABLE

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - LENZE				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
514TKFF39007	3x(2x0.14)H2 + (2x0.50)H2	9.4	47	152
514TKFF39008	4x(2x0.14)H2 + 2x(1) H2	11.2	70	229

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - YASKAWA				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF39024	(2x2x0.34)H2	7	36	83.3

MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - BOSCH REXROTH				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39027	(4x2x0.25 + 2x0.50)H2	8.7	65	111
514TKFF39009	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.5	93	165
522TKFF39028	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKFF39024	(9x0.50)H2	8.8	75	148
522TKFF3927A	(4x2x0.25 + 2x0.50)H2	8.7	65	111
514TKFF3909A	[4x2x0.14 + 4x1 + (4x0.14)H2]H2	9.7	93	165
522TKFF3928A	[3x(2x0.25)H2 + 3x0.25 + 2x1]H2	10	59	115
530TKFF3919A	(9x0.50)H2	8.8	75	148

Note : Codes ending with letter A have a Orange Sheath

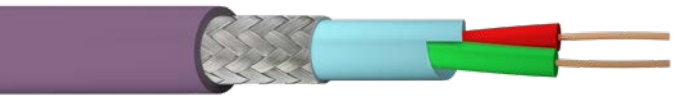
MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - SIEMENS				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39012	(12x0.25)H2	7.2	48	82.3
526TKFF39001	(4x2x0.38 + 4x0.50)H2	9.2	71	130
517TKFF39007	(8x2x0.18)H2	8	54	85
517TKFF39006	(4x2x0.18)H2	6.5	28	45
514TKFF39010	[3x(2x0.14)H1 + 4x0.14 + 4x0.25 + 2x0.50]H2	9.8	76	139
514TKFF39011	[3x(2x0.14)H1 + 4X0.14 + 2x0.50]H2	8.6	66	101
512TKFF39003	(2x2xAWG26 + 2xAWG22)H2 Drive Cliq	9.8	33	71
518TKFF39035	(2x2xAWG24 + 2xAWG22)H2 Drive Cliq	7.2	36	74

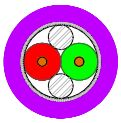
MAIN FEATURES - ANALOGIC/DIGITAL ENCODER SIGNAL TRANSMISSION - FANUC				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
517TKFF39002	(4x2x0.18 + 2x0.50)H2	7.7	32.9	70.5
517TKFF39003	(3x2x0.18 + 6x0.50)H2	8.4	63	94
517TKFF39004	(3x2x0.18 + 6x1)H2	8.7	89	140
517TKFF39005	(5x2x0.18 + 6x0.50)H2	8.7	71	94
530TKFF39017	(2x0.18 + 5x0.5)H2	7.5	48.6	143
530TKFF39018	(2x2x0.18 + 5x0.5)H2	7.7	44.5	84.4
518TKFF39027	(10x2xAWG24)H2	11.5	60	121
538TKFF3913V	(10x2xAWG28)H2	9.2	47	66

MAIN FEATURES - RESOLVER SIGNAL TRANSMISSION				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF39029	[3x(2x0.25)H2]H2	8.5	74	150
522TKFF39008	[4x(2x0.25)H2]H2	9	85	120
522TKFF39033	[8x(2x0.25)H2]H2	13.8	139	206
525TKFF39025	[4x(2x0.34)H2]H2	11.2	97	145
525TKFF39005	[5x(2x0.34)H2]H2	12.2	113	166

TK-FF390 BUS CABLE – PROFIBUS L2 DP-FIP

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE





CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 — Class 6
Insulation	Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 30 pF/m
Characteristic impedance	150 Ω ± 15 Ω
Transmission speed	12 Mbit/s with maximum length 200m 0.6 kbit/s with maximum length 1000m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

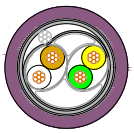
Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V - Style 21209– CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V - Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - PROFIBUS				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight · Kg/km**
524TKFF39023	(1x2x0.34mm²)HH2	8.3	24	70.4
518TKFF39032	(1x2x0.25mm²)HH2	7.8	20	67.1
524TKFF39023	1x2x0.34mm²		Green - Red	
518TKFF39032	1x2x0.25mm²		Green - Red	

TK-FF390 BUS CABLE – canopen – canbus

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	1000 Kbit/s with maximum length 40m 500 Kbit/s with maximum length 300m 100 Kbit/s with maximum length 600m 50 Kbit/s with maximum length 1000m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V -Style 21209 – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V - Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

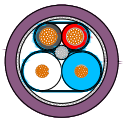
Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES – CANOPEN - CANBUS				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF39028	(2x0.34)H2	6	25	50
525TKFF39027	(2x2x0.34)H2	7.4	36	68.5
525TKFF39029	(1x4x0.34)Q/H2	7.5	36	68.5
530TKFF39019	(2x0.50)H2	6.8	28	69.1
530TKFF39023	(2x2x0.50)H2	8.8	48	92.7
525TKFF39028	2x0.34	(White – Brown)		
525TKFF39027	2x2x0.34	(White – Brown) – (Green – Yellow)		
525TKFF39029	1x4x0.34	White – Green – Brown – Yellow		
530TKFF39019	2x0.50	(White – Brown)		
530TKFF39023	2x2x0.50	(White – Brown) – (Green – Yellow)		

TK-FF390 BUS CABLE – devicenet drop and trunk

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin and Foam Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic on each pairs
Overall Shield	Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 50 pF/m
Characteristic impedance	120 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 200m 250 Kbit/s with maximum length 250m 125 Kbit/s with maximum length 500m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

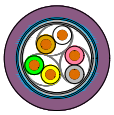
Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V - Style 21209 – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V -Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - DEVICENET				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
518TKFF39033	[(2xAWG24)H + (2xAWG22)H]H2 Drop	7.2	31	74.7
538TKFF39014	[(2xAWG18)H + (2xAWG15)H]H2 Trunk	11	102	179
518TKFF39033	2xAWG24 - Data 2xAWG22 - Power		(Blue – White) (Red – Black)	
538TKFF39014	2xAWG18 - Data 2xAWG15 - Power		(Blue – White) (Red – Black)	

TK-FF390 BUS CABLE – interbus

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE



CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 - Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and/or Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	500 Kbit/s with maximum length 400m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V -Style 21209 – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V - Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - INTERBUS				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
522TKFF39031	(3x2x0.22)HH2	7	24	61.7
522TKFF39032	(3x2x0.22 + 3G1)HH2	8.4	61	96.6
522TKFF39031	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
522TKFF39032	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
	3G1	Blue – Red – Yellow/Green		

TK-FF390 BUS CABLE – interbus

TKFF390-SERIES CABLES FOR HIGH DYNAMIC APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Inner sheath	Only Profinet/Ethernet version
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Coverage ≥ 85% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V
Test voltage	1000 V a.c.
Mutual capacitance	≤ 60 pF/m
Characteristic impedance	100 Ω ± 15 Ω
Transmission speed	100 Mbit/s with maximum length 100m 10 Mbit/s with maximum length 500m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V -Style 21209 – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V -Style 20671 – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 5E				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
518TKFF39034	Ethernet Category 5E (2x2xAWG24)HH2	6.3	21	50
518TKFF39037	Ethernet Category 5E (4x2xAWG24)HH2	7.2	33	68
512TKFF39004	Ethernet Category 5E (4x2xAWG26)HH2	6.8	26	53
524TKFF39006	Ethercat/Profinet Category 5E (4xAWG22)HH2	6.5	31	65
518TKFF39039	Ethercat/Profinet Category 5E (4xAWG24)HH2	5.5	22	46
518TKFF39034	2x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange)		
518TKFF39037	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF39004	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
524TKFF39006	2xAWG22	White - Yellow - Blue - Orange		
518TKFF39039	4xAWG24	White - Yellow - Blue - Orange		

TK-FF390 ethernet category 6

Cables for dynamic APPLICATIONS on drag chain high performance - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758

CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	Polyurethane 12Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Characteristic impedance	100 Ω
Mutual capacitance	< 50 pF/m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 6				
Tecnikabel code	Description	Ø Nominal • mm	Copper weight • Kg/km	Cable weight • Kg/km
518TKFF39041	Ethernet Category 6 (4x2xAWG24)HH2	7.6	34	70
512TKFF39011	Ethernet Category 6 (4x2xAWG26)HH2	7.2	27	63
518TKFF39041	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF39011	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		

TK-FF390 ethernet category 7

Cables for dynamic APPLICATIONS on drag chain high performance - UL/CSA recognized 90°C 30 V or 300 V (600 V on request) according to UL758

CABLE SPECIFICATIONS

Conductor	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Insulation	Polyolefin (UL-CSA Standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic Tape
Overall Shield	Aluminum/Plastic Tape and Tinned Copper Braid Coverage ≥ 85% according to EMC 2014/30/EU ©
Sheath	Polyurethane 12Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V (600V on request)
Test voltage	1000 V a.c. or 2000 V a.c.
Characteristic impedance	100 Ω
Mutual capacitance	< 50 pF/m
Temperature range	- 40°C ÷ +90°C
Bending Radius	5 x Ø (Static Installation) 7.5 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	15 m (only horizontal)
Flex life	5.000.000 cycles
Torsion	Please contact our technical support office

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	Bare Copper according to CEI 20-29 Class 6 – IEC 60228 Class 6 – VDE 0295 Class 6
Flame Retardant	EN 50265-1-2 – IEC 60332-1-2 – UL VW-1 – CSA FT1
Halogen Free	EN 50267-2-1 – IEC 60754-1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 7				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
518TKFF39040	Ethernet Category 7 [4x(2xAWG24)H]HH2	10.6	42	108
512TKFF39012	Ethernet Category 7 [4x(2xAWG26)H]HH2	9.7	32	90
518TKFF39040	4x2xAWG24	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		
512TKFF39012	4x2xAWG26	(Blue - White/Blue) - (Orange - White/Orange) (Green - White/Green) - (Brown - White/Brown)		

These images are for illustrative purposes.

TK - FF600 FOR ROBOTICS APPLICATION, PUR OIL RESISTANT, UL/CSA APPROVALS, HALOGEN FREE

Product description and application

Single-core and multicore cables for dynamic installations with bending-torsion expressly designed for automatic machine, gantry, and wrist robot manufacturers. TK FF600® series cables are UL and CSA compliant and particularly suitable for bending-torsion applications, with very high speeds and acceleration, and small bending radii. The outer sheath on these cables is made of materials chosen to guarantee excellent resistance, even to cooling oils.

TKFF600-SINGLE AND Multicore UNSHIELDED WELDING CABLE

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE 0295
Insulation	Polyolefin (UL-CSA Standards)
Core identification	Black (other colours available upon request)
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Black RAL 9005 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	1000 V Cross-sectional area ≥ 1.0mm² (AWG18)
Test voltage	3000 V a.c. Cross-sectional area ≥ 1.0mm² (AWG18)
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SINGLE AND MULTICORE UNSHIELDED – WELDING CABLES				
Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
290TKFF60001	1x25mm²	11.1	245	336
291TKFF60001	1x27mm²	13.4	288	400
293TKFF60001	1x35mm²	12.7	346	498
295TKFF60001	1x50mm²	15	346	510
385TKFF60001	1x3x16mm²	19	517	799
390TKFF60001	1x3x25mm²	22.2	807	1156
393TKFF60001	1x3x35mm²	26.6	1143	1798
393TKFF60002	1x2x35mm²+1x16mm²	24.5	962	1361
393TKFF60003	1x2x35mm² + 1x25mm²	25	1064	1427

TKFF600-MULTICORE COMMAND/DATA/BUS CABLE

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE - 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	Black Numbered + Yellow/Green (other colours - available upon request)
Overall Shield	Wrap Copper Coverage ≥ 90% according to EMC - 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA standards)
Outer jacket colour	Black RAL 9005 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	300 V Cross-sectional area 0.5mm² (AWG21) ÷ 1.0mm² (AWG18) 1000 V Cross-sectional area 1.0mm² (AWG18)
Test voltage	2000 V a.c. Cross-sectional area 0.5mm² (AWG21) ÷ 1.0mm² (AWG18) 3000 V a.c. Cross-sectional area 1.0mm² (AWG18)
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V Cross-sectional area 0.5mm² (AWG21) ÷ 1.0mm² (AWG18) UL 90°C 1000 V – CSA AWM I/II A/B 90°C 1000 V, Cross-sectional area ≥ 1-0mm² (AWG18)
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B - –
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - TK-FF600 COMMAND CABLES (KSR)

Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
540TKFF60001	7x1 + (2x0.50)H1	9.8	93.3	172
540TKFF60002	(2x1)H1H + 23x1	13.2	242	370
540TKFF60003	(2x1)HH1 + 5x4x1 + 3x1	15.5	260	419
540TKFF60004	[(2x1)H1H + 24x1]	14.8	289	441
540TKFF60005	(2x1)H1H + 5x3x1 + 1x1	14	190	323
540TKFF60006	(2x1)H1H + 16x1	13	180	315
540TKFF60007	(2x1)H1H + 3x3x1 + 1x1	11.5	137	228
530TKFF60001	3x3x0.5 + 4x0.5 + 3x1 + (2x0.5)H1	12.5	125	245
530TKFF60002	4G1.5 + 4x(2x.25)H1 + 2x.5	12.8	127	270
522TKFF60001	4G1.5 + 5x(2x.25)H1 + 2x.5	16	196	419

MAIN FEATURES - TK-FF600 DATA AND BUS CABLES

Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
522TKFF60002	2x(2x1)H1 + 5x(2x0.25)H1	12.9	140	266
522TKFF60003	5x(2x.25)H1 + (2x1)H1 + (3x1)H1	16	168	356
522TKFF60004	4G1.5 + 4x(2x.25)H1 + 2x.5	12.8	127	270
530TKFF60003	[2x(2x0.5)H1/N + 24G0.5]H1	16	198	439
535TKFF60001	2x(2x0.75)H1	9.3	55.3	119
345TKFF60001	(5 G 1.5)	9.8	79.9	169
900TKFF60001	(2x F.O. PMMA/PE 1000/2.2)	8	0	64.4

TKFF600-BUS CABLE PROFIBUS L2 DP-FIP

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Wrap Copper Coverage ≥ 90% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual Capacitance	≤ 30 pF/m
Characteristic Impedance	150 Ω ± 15 Ω
Transmission Speed	12 Mbit/s with maximum length 200m 0,6 Kbit/s with maximum length 1000m
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - SINGLE AND MULTICORE UNSHIELDED – WELDING CABLES

Tecnikabel code	Description	Ø Nominal mm	Copper weight Kg/km	Cable weight Kg/km
524TKFF60001	(1x2x0.34mm²)HH1	8.2	24	70.4
518TKFF60002	(1x2x0.25mm²)HH1	7.8	20	67.1
524TKFF60001	1x2x0.34mm²		Green - Red	
518TKFF60002	1x2x0.25mm²		Green - Red	

TKFF600-BUS CABLE CANOPEN/CANBUS

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Wrap Copper Coverage ≥ 90% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual Capacitance	≤ 60 pF/m
Characteristic Impedance	120 Ω ± 15 Ω
Transmission Speed	1000 Kbit/s with maximum length 40m 500 Kbit/s with maximum length 300m 100 Kbit/s with maximum length 600m 50 Kbit/s with maximum length 1000m
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES – CANOPEN - CANBUS				
Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight · Kg/km
525TKFF60004	(2x0.34)H1	6	25	50
525TKFF60003	(2x2x0.34)H1	7.5	36	68.5
530TKFF60006	(2x0.50)H1	6.7	28	69.1
530TKFF60005	(2x2x0.50)H1	8.4	48	92.7
525TKFF60028	2x0.34	(White - Brown)		
525TKFF60027	2x2x0.34	(White - Brown) - (Green - Yellow)		
525TKFF60029	1x4x0.34	(White – Green – Brown – Yellow)		
530TKFF60019	2x0.50	(White - Brown)		
530TKFF60020	2x2x0.50	(White - Brown) - (Green - Yellow)		

TKFF600-BUS CABLE DEVICENET

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE - 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	See following table
Pairs Shield	Aluminum/Plastic on each pairs
Overall Shield	Wrap Copper Coverage ≥ 90% according to EMC - 89/336
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual Capacitance	≤ 50 pF/m
Characteristic Impedance	120 Ω ± 15 Ω
Transmission Speed	500 Kbit/s with maximum length 200m 250 Kbit/s with maximum length 250m 125 Kbit/s with maximum length 500m
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

MAIN FEATURES - BUS CABLES - DEVICENET				
Tecnikabel code	**Description**	**Ø Nominal mm**	**Copper weight Kg/km**	**Cable weight Kg/km**
518TKFF60002	[(2xAWG24)H + (2xAWG22)H]H1 Drop	7.1	31	74.7
538TKFF60001	[(2xAWG18)H + (2xAWG15)H]H1 Trunk	11	102	179
518TKFF60002	2xAWG24 - Data		(Blue - White)	
	2xAWG22 - Power		(Red - Black)	
538TKFF60001	2xAWG18 - Data		(Blue - White)	
	2xAWG15 - Power		(Red - Black)	

TKFF600-BUS CABLE ETHERNET CAT 5E

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE - 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Wrap Copper Coverage ≥ 90% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Green RAL 6018 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V
Test voltage	1000 V a.c.
Mutual Capacitance	≤ 60 pF/m
Characteristic Impedance	100 Ω ± 15 Ω
Transmission Speed	100 Mbit/s with maximum length 100m 10 Mbit/s with maximum length 500m
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B
Water Resistance	UL 1581 – IEC 60811
EC Directives Product compliant with Low Voltage Regulation 72/33/EEC	
Directive EMC 2014/30/EU Electromagnetic Compatibility	

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - ETHERNET CAT 5E				
Tecnikabel code	**Description**	**Ø Nominal · mm**	**Copper weight · Kg/km**	**Cable weight ·Kg/km**
518TKFF60003	(2x2xAWG24)HH1	6.5	19	44
518TKFF60004	(4x2xAWG24)HH1	6.5	20	64.8
512TKFF60001	(4x2xAWG26)HH1	6.8	23	42
518TKFF60003	2x2xAWG24	(Blue – White/Blue) - (Orange– White/Orange)		
518TKFF60004	4x2xAWG24	(Blue – White/Blue) - (Orange– White/Orange) (Green – White/Green) – (Brown – White/Brown)		
512TKFF60001	4x2xAWG26	(Blue – White/Blue) - (Orange – White/Orange) (Green – White/Green) – (Brown – White/Brown)		

TKFF600-BUS CABLE INTERBUS

TKFF600-SERIES CABLES FOR ROBOTICS APPLICATIONS PUR OIL RESISTANT, UL/CSA APPROVAL, HALOGEN FREE

CABLE SPECIFICATIONS

Conductor	Copper wire, finest multi-strand according to VDE - 0295
Insulation	Special Thermoplastic Material (UL-CSA standards)
Core identification	See following table
Overall Shield	Aluminum/Plastic Tape and Wrap Copper Coverage ≥ 90% according to EMC 89/336 ©
Sheath	Polyurethane 11Y (UL-CSA Standards)
Outer jacket colour	Violet RAL 4001 according to DESINA colour chart page 163, other colours available upon request

TECHNICAL DATA

Operating voltage	30 V or 300 V
Test voltage	1000 V a.c. or 2000 V a.c.
Mutual Capacitance	≤ 60 pF/m
Characteristic Impedance	100 Ω ± 15 Ω
Transmission Speed	500 Kbit/s with maximum length 400m
Temperature range	-40°C ÷ +90°C
Bending Radius	10 x Ø (Dynamic Installation)
Maximum Speed	300 m/min
Maximum Acceleration	50 m/s²
Maximum Chain length	30 m (only horizontal)
Flex life	6.000.000 ÷ 10.000.000 cycles
Torsion	± 360° on a length of 100 x Ø cable

REFERENCE STANDARDS

Cable according to UL758, UL1581 and CSA C22.2 210.2	UL 90°C 300 V – CSA AWM I/II A/B 90°C 300 V, or UL 90°C 30 V – CSA AWM I/II A/B 90°C 30 V
Flame Retardant	CEI 20-35 – EN50265 – IEC 60332-1 – UL VW-1 – CSA FT1
Hydrocarbons and Oil Resistance	UL 1581 – VDE 0472 part 803 A/B - –
Water Resistance	UL 1581 – IEC 60811

EC Directives Product compliant with Low Voltage Regulation 72/33/EEC

Directive EMC 2014/30/EU Electromagnetic Compatibility

European Directives 2011/65/CE (RoHS - Reduction of Hazardous Substances) and 2002/96/CE (WEEE – Waste from Electrical and Electronic Equipment)

MAIN FEATURES - BUS CABLES - INTERBUS

Tecnikabel code	Description	Ø Nominal · mm	Copper weight · Kg/km	Cable weight ·Kg/km
522TKFF60007	(3x2x0.22)HH1	7	24	61.7
522TKFF60008	(3x2x0.22 + 3G1)HH1	8.4	61	96.6
522TKFF60007	3x2x0.22	(White-Brown) – (Green-Yellow) – (Grey-Pink)		
522TKFF60008	3x2x0.22 3G1	(White-Brown) – (Green-Yellow) – (Grey-Pink) Blue – Red – Yellow/Green		

These images are for illustrative purposes.

RESEARCH & DEVELOPMENT

tecnikabel's laboratories
tecnikabel's work has always focused on research and development.
tecnikabel has followed this policy over the last few years, investing significant sums, as well as human resources, in research and development. six staff members with technical diplomas and degrees work in this division. they are supported by a secretary's office, which handles customer contacts as well as contacts with other corporate bodies.

tecnikabel's laboratories can test product quality in all segments by carrying out the following:
- electric/electronic tests
- physical/chemical tests
- mechanical/dynamic tests

ELECTRIC/ELECTRONIC TESTS

TECNIKABEL works jointly with customers who are leaders in the telecommunications, broadcasting, and data transmission sector, as well as in the automation, offshore, and railway sectors.

Specific products require particular transmission measurements, such as: resistance, electric capacitance, impedance, return loss, attenuation, crosstalk, skew time, etc...

These measurements provide feedback when preparing designs and are useful for project validation and cable prototyping.

The CPMS transmission parameter test bench has three different sections capable of measuring transmission features for:

- LAN cables to a frequency of 600 Mhz
- coaxial cables
- paired cables

The bench consists of:

- a network analyser up to 3 GHz
- an LCR meter
- hardware and software for data acquisition and processing

This test bench was validated by TELECOM Italia when approving (telephone) exchange cables (ADSL, coaxial, paired, etc...).
The transmission test system is completed with other HP 4194 A and HP 8753 A network analysers spanning a frequency range of a few Hz to 3 Giga Hertz.

DIELECTRIC RESISTANCE TEST

A GeneRAL Radio 1836 megohmmeter and a SATURN ISO megohmmeter are used to test the quality of insulation materials.

DIELECTRIC RIGIDITY TEST

These tests are carried out on small-sized specimens of up to 5 kV in the laboratory using an alternating voltage generator.
A high voltage cabin is used for larger specimens up to 20 kV.

CURRENT STABILITY TEST

These tests are carried out using a direct voltage generator up to 10 kV.

CABLE OPERATING VOLTAGE TEST

These tests are carried out in two high-voltage cabins with capacity of up to 20 kV and 30 kV respectively.

HIGH-RESOLUTION ELECTRIC RESISTANCE TEST

These tests are carried out using a nanohmmeter for cables with cross-sectional areas greater than 16 mm².

TRANSMISSION TEST BENCH

PHYSICAL/CHEMICAL TESTS

The physical and chemical properties of each of the components of the cable must be tested to guarantee that performance remains unaltered throughout the ca ble's entire lifecycle.

Instruments used:

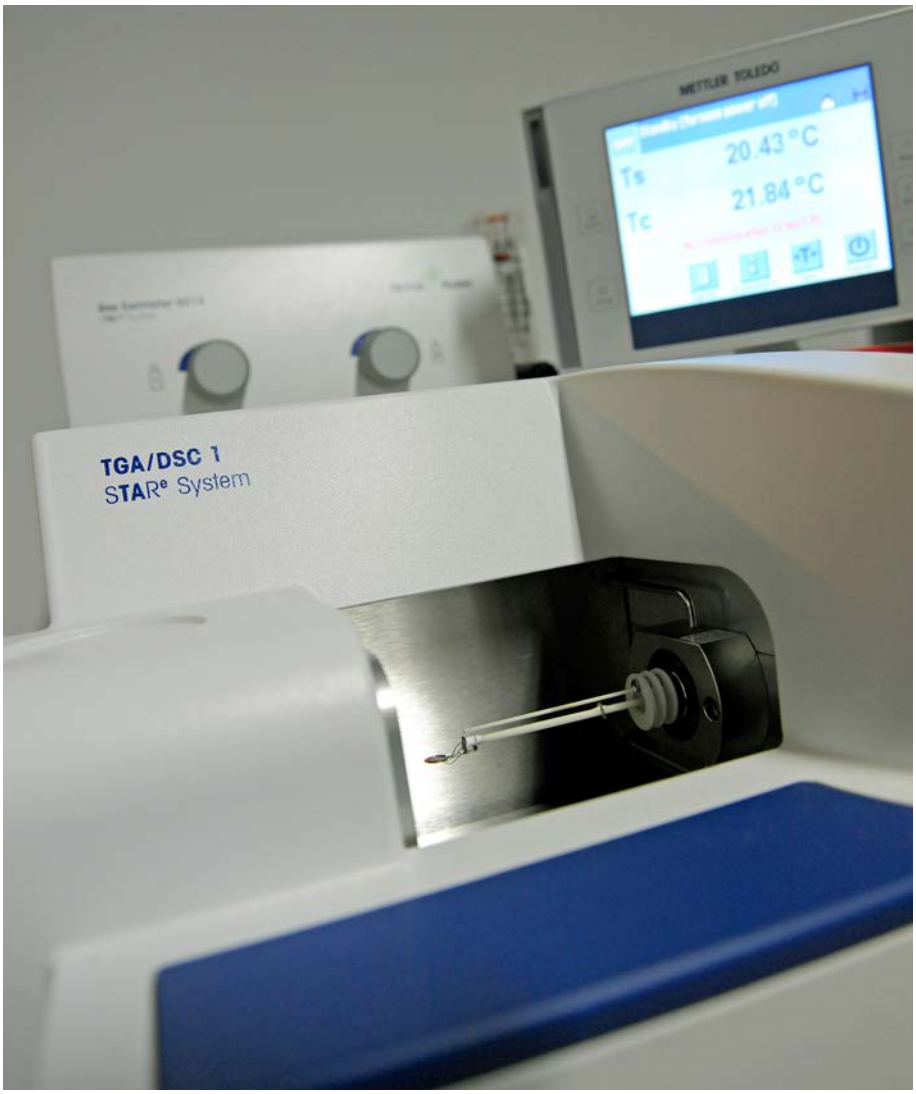
- Lloyd LRX dynamometer for tensile strengths of up to 2500 N
- Mitutoyo PJ 300 profile projector
- UL/CEI compliant aging ovens
- Mettler PM300 precision scales, accuracy 1/100
- Mettler PM100 hygrometric scales, accuracy 1/1000
- Kern ALJ 160-4M analytic scales, accuracy 1/1000
- Dynamometer for tensile strengths of up to 300,000N
- T.G.A.
- Cabinets for flame retardant tests according to CEI 20-
- 35/IEC 60332-1, UL 1581 (UL VW1 CSA FT1), UL CL2 and IEC
- 60332-3 standards

AGING TEST

UL/CEI compliant cables.

FIRE-RETARDANT TEST

according to CEI IEC EN 60332-3.



TGA THERMO GRAVIMETRIC ANALYSIS

MATERIAL AGING OVENS

MECHANICAL/DYNAMIC TESTS

In the industrial automation and robotics sector, guaranteeing unaltered cable performances while machines are operating is essential. Mechanical stress from bending, torsion, or a combination of these, are critical issues for this type of use.

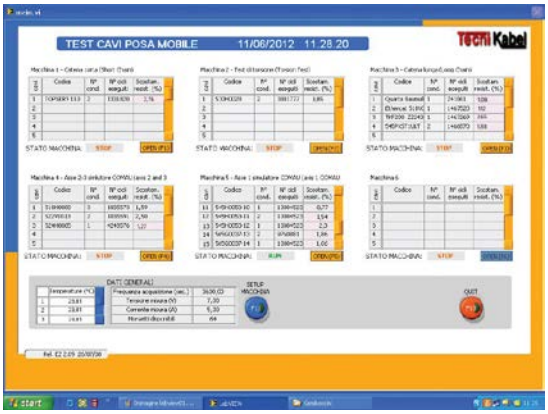
Instruments used for these tests:

CABLE CHAINS
Cable chains with high dynamic performances, increasingly smaller bending radiuses and higher speeds and acceleration are in growing demand for industrial automatic storage systems and machine tools.
Tests spanning from a minimum bending radius of 15 mm to a maximum of 250 mm can be carried out. The chains used for tests are driven by brushless servomotors.

CHAIN 1,2,3
Top speed: 200 m/min. Maximum acceleration: 10 m/s2 Bending radius: from 15 to 250 mm
Maximum length: 18 m

CHAINS 5-8 WITH A LINEAR MOTOR
Top speed: 300 m/min Acceleration: 50 m/s2 Bending radius: from 50 to 150 Maximum
length: 6 m.

The chains are connected to a data acquisition system, developed in a LabVIEW®, environment, to acquire electrical resistance values for conductor and monitor trends with regards to the number of cycles in real time. This system allows users to access a database, where they can retrieve and access data easily. The system is also visible via an Intranet and the Internet.



DATA ACQUISITION SYSTEM WITH UP TO 64 CHANNELS

CHAIN WITH A LENGTH OF 18 m – TOP SPEED 200 m/min – MAXIMUM ACCELERATION 10 m/s²

ROBOT SIMULATOR

TECNIKABEL working in close contact with leading robot manufacturers, has developed mechanical simulators that reproduce all of the axes of a wrist robot to test the technical lifespan of a cable after millions of cycles.

TORSION SIMULATOR

These devices are designed by Tecnikabel technicians to test seveRAL cables at the same time, with the possibility of varying: rotation angles, length on which torsion takes place, bending radiuses, speed and acceleration, the combination of different movements in terms of bending and torsion. Both devices can test cables with different diameters.

MATERIAL AGING OVENS

CHAIN WITH A LENGTH OF 18 m – TOP SPEED 200 m/min – MAXIMUM ACCELERATION 10 m/s²

HOT PARTICLE RESISTANCE TESTS

The device below is CEI 20-19/2 and HD 22.2 compliant, which consists in bringing an incandescent filament close to a cable,

applying an appropriate amount of force, for a predetermined period of time, and then evaluating the integrity of the cablewith a voltage test.

HOT PARTICLE TEST DEVICE

UV RESISTANT

Some materials used to mold cable ties and associated fixing devices have declared resistance to UV light. The present

standards for cable ties require additional testing for resistance to UV light conducted on the completed product. Although there are different exposure methods that can be used to represent actual sunlight exposure, the xenon-arc light source is increasingly recognized as providing the closest representation. The xenon-arc light source exposure method is found in ISO 4892-2 (method A) which is essentially harmonized with ASTM G 155 (Method 1). The test for cable ties consists of 1000 hours of continuous exposure to this light source, and intermittent exposure to water spray. Following this UV light exposure, cable ties and fixing devices are subjected to mechanical tests to determine any degree of degradation.

UV TEST MACHINE Q-SUN Xe-2 Xenon TEST CHAMBER

These images are for illustrative purposes.

TECHNICAL INFORMATIONS

AWG CONDUCTOR SIZE ACCORDING TO UL758 STANDARDS								
	Diameter of the solid conductor				Stranded wire cross-sections			
	Nominal		Minimum		Nominal		Minimum	
Size Conductors AWG	Mils	mm.	Mils	mm.	Cmils	mm²	Cmils	mm²
50	1.39	4.11	1.38	0.25	16.20	8.17	16.00	8.06
49	1.11	4.42	1.10	0.28	1.23	10.24	1.21	10.13
48	1.24	5.15	1.23	0.31	1.54	12.48	1.51	12.45
47	1.40	5.56	1.39	0.35	2.36	16.33	2.32	16.13
46	1.57	6.39	1.55	0.39	2.46	2.05	2.41	2.02
45	2.16	7.27	2.14	0.44	3.10	2.37	3.04	2.34
44	2.0	0.51	2.38	0.50	4.0	3.23	4.32	3.18
43	2.2	0.56	2.18	0.55	5.24	4.05	5.14	4.00
42	2.5	1.04	2.48	1.03	6.25	5.17	6.13	51.55.00
41	2.8	1.11	3.17	1.10	8.24	6.37	8.08	6.29
40	3.1	1.19	3.07	1.18	10.01	8.07	9.42	7.57
39	3.5	1.29	3.47	1.28	12.2	10.21	11.9	10.03
38	4.0	1.42	4.36	1.41	16.0	13.31	15.7	13.16
37	4.5	1.54	4.46	1.53	20.2	1.43	19.8	1.40
36	5.0	2.07	5.35	2.06	25.0	2.07	24.5	2.04
35	5.6	2.22	5.54	2.21	31.4	2.39	30.8	2.36
34	6.3	2.40	6.24	2.38	39.7	0.20	38.9	3.17
33	7.1	3.00	7.03	2.59	50.4	4.15	49.4	4.10
32	8.0	3.23	8.32	3.21	64.0	5.24	62.7	5.18
31	8.9	3.46	9.21	3.44	79.2	6.41	77.6	6.33
30	10.0	4.14	9.9	4.11	100	8.27	98	8.17
29	11.3	4.47	11.2	4.44	128	10.47	125	10.33
28	12.6	5.20	12.5	5.18	159	13.24	156	13.10
27	14.2	6.01	14.1	5.58	202	1.42	198	1.40
26	15.9	6.44	15.7	6.39	253	2.08	248	2.06
25	17.9	7.35	17.7	7.30	320	2.42	314	2.39
24	20.1	8.31	19.9	8.26	404	3.25	396	3.21
23	22.6	9.34	22.4	9.29	511	4.19	501	4.14
22	25.3	10.43	25.0	10.35	640	5.24	627	5.18
21	28.5	12.04	28.2	11.56	812	6.52	796	6.44
20	32.0	13.33	31.7	13.25	1020	8.39	1000	8.29
19	35.9	15.12	35.6	15.04	1290	10.53	1264	10.41
18	40.3	1.02	40.0	1.16	1620	13.43	1588	13.27
17	45.3	1.15	44.9	3.20	2050	1.04	2009	1.02
16	50.8	1.29	50.3	5.38	2580	1.31	2528	1.28
15	57.1	1.45	56.5	8.15	3260	2.05	3195	2.02
14	64.1	2.03	63.5	11.13	4110	2.08	4028	2.04
13	72.0	2.23	71.0	2.20	5180	3.03	5076	2.58
12	80.8	2.05	80.0	2.03	6530	3.31	6399	3.24

AWG CONDUCTOR SIZE ACCORDING TO UL758 STANDARDS								
	Diameter of the solid conductor				Stranded wire cross-sections			
	Nominal		Minimum		Nominal		Minimum	
Size Conductors AWG	Mils	mm.	Mils	mm.	Cmils	mm²	Cmils	mm²
11	90.7	2.30	90	2.29	8230	4.17	8065	4.09
10	101.9	11.48	101	2.57	10380	9.21	10172	5.16
9	114.4	17.06	113	3.27	13090	16.31	12828	6.50
8	128.5	7.24	127	3.23	16510	14.07	16180	8.2
7	144.3	14.05	143	4.03	20820	10.55	20404	10.34
6	162.0	5.55	160	4.06	26240	13.30	25715	13.03
5	181.9	14.20	180	4.57	33090	17.17	32428	16.43
4	204.3	8.09	202	5.13	41740	21.15	40905	21.13
3	229.3	18.47	227	6.17	52620	3.07	51568	26.14.00
2	257.6	15.03	255	6.48	66360	10.02	65033	9.35
1	289.3	12.48	286	7.26	83690	18.41	82016	17.56
1/0	324.9	12.12	322	8.18	105600	5.49	103488	4.42
2/0	364.8	12.46	361	9.17	133100	19.43	130438	18.08
3/0	409.6	10.40	406	10.31	167800	13.01	164444	11.31
4/0	460.0	12.08	455	11.56	211600	107.2	207368	105.1
250	-	-	-	-	250	127	245	124.1
300	-	-	-	-	300	152	294	149.0
350	-	-	-	-	350	177	343	173.8
400	-	-	-	-	400	203	392	198.6
450	-	-	-	-	450	228	441	223.5
500	-	-	-	-	500	253	490	248.3
550	-	-	-	-	550	279	539	273.1
600	-	-	-	-	600	304	588	297.9
650	-	-	-	-	650	329	637	322.8
700	-	-	-	-	700	355	686	347.6
750	-	-	-	-	750	380	735	372.4
800	-	-	-	-	800	405	784	397.2
900	-	-	-	-	900	456	882	446.9
1000	-	-	-	-	1000	507	980	496.6
1100	-	-	-	-	1100	557	1078	546.2
1200	-	-	-	-	1200	608	1178	595.9
1250	-	-	-	-	1250	633	1225	620.7
1300	-	-	-	-	1300	659	1274	645.5
1400	-	-	-	-	1400	709	1372	695.2
1500	-	-	-	-	1500	760	1470	744.9
1600	-	-	-	-	1600	811	1568	794.5
1700	-	-	-	-	1700	861	1666	844.2
1750					1750	887	1715	869.0
1800	-	-	-	-	1800	912	1764	893.8
1900	-	-	-	-	1900	963	1862	943.5
2000	-	-	-	-	2000	1010	1960	993.1

GENERAL CHARACTERISTICS OF PLASTIC MATERIALS							
Material	Reference	According to VDE	Temperature Range °C	Elongation at break %	Tensile strenght N/mm2	Dielectric constant	Density
Polyvinyl chloride	PVC	Y	-30 ÷ +105	150 ÷ 300	15 ÷ 25	3.5 ÷ 4.5	1.3 ÷ 1.
Semi-rigid Polyvinyl chloride	SR-PVC	-	-15 ÷ +105	150 ÷ 200	15 ÷ 21	3.5 ÷ 4	1.2 ÷ 1.35
High-Density Polyethylene	HDPE	2Y	-50 ÷ +100	400 ÷ 600	20 ÷ 30	2.3	0.94 ÷ (
Low-Density Polyethylene	LDPE	2Y	-50 ÷ +70	400 ÷ 600	10 ÷ 20	2.3	0.91 ÷ 0.92
Cellular Polyethylene	PES	02Y	-50 ÷ +70	300 ÷ 400	8 ÷ 12	1.6	0.5 ÷ (
Cross-linked Polyethylene	XLPE	2X	-50 ÷ +105	300 ÷ 400	15 ÷ 25	2.3	1.33
Polypropylene	PP	9Y	-30 ÷ +105	500 ÷ 700	15 ÷ 25	2.25	1.30
Polyester	TPE-E	12Y	-50 ÷ +105 (+125)	400 ÷ 1000	15 ÷ 25	2.8 ÷ 3.8	1.2 ÷ 1.3
Polyurethane	PUR	11Y	-50 ÷ +90	300 ÷ 600	30 ÷ 60	4 ÷ 6	1.1 ÷ 1.
Polyolefin Elastomer	TPE-O	-	-40 ÷ +120	400 ÷ 600	9 ÷ 15	2.7	1.2 ÷ 1.25
LSZH Compuond	M1	H	-40 ÷ +80	150 ÷ 250	10 ÷ 15	3.5 ÷ 5	1.45 ÷
LSZH Cross-linked Compuond	M2	HX	-40 ÷ +105	150 ÷ 250	10 ÷ 15	3.5 ÷ 5	1.45 ÷ 1.6
Polyamide	PA	4Y	-70 ÷ +125	200 ÷ 400	50 ÷ 80	3.5	1.1 ÷ 1.15
Polyethereterketone	PEEK	-	-60 ÷ +200	100 ÷ 150	40 ÷ 50	3.2	1.2
Polyvinylidene Fluoride	PVDF	10Y	-50 ÷ +130	100 ÷ 300	40 ÷ 50	7	1.7 ÷ 1
Ethylenetetrafluoroethylene	ETFE	7Y	-100 ÷ +170	100 ÷ 300	40 ÷ 50	2.7	1.7
Per fluoro ethylenepropylene	FEP	6Y	-100 ÷ +215	250 ÷ 350	20 ÷ 30	2.15	2.15
Polytetrafluoroethylene	PTFE	5Y	-180 ÷ +260	250 ÷ 400	20 ÷ 30	2.1	2.2
Perfluoroalkoxyl	PFA	-	-180 ÷ +260	200 ÷ 400	20 ÷ 30	2.1	2.15

GENERAL CHARACTERISTICS OF PLASTIC MATERIALS

Volume resistivity kV/mm	Flame resistance	Water Resistance	Hydrocarbons Resistance	Oil and grease Resistance	Solventes Resistance	Acid Resistance	Wheather Resistance
15	Self extinguishing	Very Good	Sufficient	Good	Insufficient	Good	Good
20	Self extinguishing	Very Good	Sufficient	Good	Insufficient	Good	Good
24	Inflammable	Very Good	Insufficient	Good	Insufficient	Good	Good
24	Inflammable	Very Good	Insufficient	Good	Insufficient	Good	Good
20	Inflammable	Very Good	Insufficient	Good	Insufficient	Good	Good
24	Inflammable	Very Good	Good	Good	Sufficient	Good	Good
26	Inflammable	Very Good	Sufficient	Very Good	Sufficient	Good	Good
15	Inflammable	Good	Good	Very Good	Good	Good	Good
20	Inflammable (Self extinguishing)	Good	Good	Very Good	Good	Sufficient	Good
24	Inflammable	Good	Insufficient	Insufficient	Insufficient	Good	Good
25	Self extinguishing	Sufficient	Sufficient	Insufficient	Insufficient	Insufficient	Good
25	Self extinguishing	Sufficient	Good	Sufficient	Sufficient	Insufficient	Good
15	Inflammable	Sufficient	Sufficient	Very Good	Good	Sufficient	Good
20	No Inflammable	Good	Good	Very Good	Very Good	Very Good	Good
10	Self extinguishing	Good	Good	Good	Very Good	Very Good	Very Good
19	No Inflammable	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good
20	No Inflammable	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good
19	No Inflammable	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good
20	No Inflammable	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good

CLASS 1 - SOLID CONDUCTOR FOR SINGLE-CORE AND MULTICORE CABLES		
Nominal Section mm²	Maximum resistance of conductors at 20°C Circular annealed copper conductors	
	Plain Ω/km	Metal-Coated Ω/km
0.5	36	36.7
0.75	24.5	24.8
1	18.1	18.2
1.5	12.1	12.2
2.5	7.41	7.56
4	4.61	4.7
6	3.08	3.11
10	1.83	1.84
16	1.15	1.16
25	0.727	-
35	0.524	-
50	0.387	-
70	0.268	-
95	0.193	-
120	0.153	-
150	0.124	-
185	0.101	-
240	0.0775	-
300	0.062	-
400	0.0465	-
500	-	-
630	-	-
800	-	-
1000	-	-

CLASS 2 - STRANDED CONDUCTORS FOR SINGLE-CORE AND MULTICORE CABLES

Nominal Section mm²	Minimum number of wires in the conductor						Maximum resistance of conductors at 20°C	
	Cicular		Compacted		Shaped		Annealed copper conductor	
	Cu	Al	Cu	Al	Cu	Al	Plain Ω/km	Metal-Coated Ω/km
0.5	7	-	-	-	-	-	36	36.7
0.75	7	-	-	-	-	-	24.5	24.8
1	7	-	-	-	-	-	18.1	18.2
1.5	7	-	6	-	-	-	12.1	12.2
2.5	7	-	6	-	-	-	7.41	7.56
4	7	-	6	-	-	-	4.61	4.7
6	7	-	6	-	-	-	3.08	3.11
10	7	7	6	6	-	-	1.83	1.84
16	7	7	6	6	-	-	1.15	1.16
25	7	7	6	6	6	6	0.727	0.734
35	7	7	6	6	6	6	0.524	0.529
50	19	19	6	6	6	6	0.387	0.391
70	19	19	12	12	12	12	0.268	0.27
95	19	19	15	15	15	15	0.193	0.195
120	37	37	18	18	18	18	0.153	0.154
150	37	37	18	18	18	18	0.124	0.126
185	37	37	30	30	30	30	0.0991	0.1
240	37	37	34	34	34	34	0.0754	0.0762
300	61	61	34	34	34	34	0.0601	0.0607
400	61	61	53	53	53	53	0.047	0.0475
500	61	61	53	53	53	53	0.0366	0.0369
630	91	91	53	53	53	53	0.0283	0.0286
800	91	91	53	53	-	-	0.0221	0.0224
1000	91	91	53	53	-	-	0.0177	0.0291

CLASS 5 - FLEXIBLE COPPER CONDUCTORS FOR SINGLE-CORE AND MULTICORE CABLES			
Nominal Section mm²	Maximum diameter of wire in conductor mm	Maximum resistance of conductors at 20°C Circular annealed copper conductors	
		Plain Ω/km	Metal-Coated Ω/km
0.5	0.21	39	40.1
0.75	0.21	26	26.7
1	0.21	19.5	20
1.5	0.26	13.3	13.7
2.5	0.26	7.98	8.21
4	0.31	4.95	5.09
6	0.31	3.3	3.39
10	0.41	1.91	1.95
16	0.41	1.21	1.24
25	0.41	0.78	0.795
35	0.41	0.554	0.565
50	0.41	0.386	0.393
70	0.51	0.272	0.277
95	0.51	0.206	0.21
120	0.51	0.161	0.164
150	0.51	0.129	0.132
185	0.51	0.106	0.108
240	0.51	0.0801	0.0817
300	0.51	0.0641	0.0654
400	0.51	0.0486	0.0495
500	0.61	0.0384	0.0391
630	0.61	0.0287	0.0292

CLASS 6 - FLEXIBLE COPPER CONDUCTORS FOR SINGLE-CORE AND MULTICORE CABLES			
Nominal Section mm^2	Maximum diameter of wire in conductor mm	Maximum resistance of conductors at 20°C Circular annealed copper conductors	
		Plain Ω/km	Metal-Coated Ω/km
0.5	0.16	39	40.1
0.75	0.16	26	26.7
1	0.16	19.5	20
1.5	0.16	13.3	13.7
2.5	0.16	7.98	8.21
4	0.16	4.95	5.09
6	0.21	3.3	3.39
10	0.21	1.91	1.95
16	0.21	1.21	1.24
25	0.21	0.78	0.795
35	0.21	0.554	0.565
50	0.31	0.386	0.393
70	0.31	0.272	0.277
95	0.31	0.206	0.21
120	0.31	0.161	0.164
150	0.31	0.129	0.132
185	0.41	0.106	0.108
240	0.41	0.0801	0.0817
300	0.41	0.0641	0.0654

LOW CAPACITANCE POWER CABLES

With the use of the latest generation in IGBT (power semiconductors used in INVERTERS) electrical phenomena that was once almost insignificant can be enhanced, such as:

a) Attenuation of energy being transmitted to the motor from the inverter.

b) Leakage current to ground.

Especially when this is a consequence of increasingly faster switching fronts* (approximately 8 kV/µsec).

PHENOMENON (A)
The influence of cable capacitance (C) on power transmission is fundamental,since line attenuationis a=√wRC. Therefore, the lower the electric capacitance of the cable (conductor/conductor and conductor/shield) the greater the power transmitted to the motor from the inverter/converter, therefore enhancing system performance.

PHENOMENON (B)
The cable is considered a capacitor, because the capacitance (C) generated between two conductors and between a conductor and shield increases with the length of the cable itself.

The current absorbed by a capacitor and discharged to the ground is I=wCU. As such, we can deduce that, in this case as well, capacitance must also be as low as possible in order to reduce current leakage, which could be responsible for ill- timed differential interventions.determine any degree of degradation.

EXCERPT FROM NORM IEC 60204-1

CURRENT-CARRYING CAPACITY AND OVERCURRENT PROTECTION OF CONDUCTORS AND CABLES IN THE ELECTRICAL EQUIPMENT OF MACHINES

The purpose of this Annex is to provide additional information on the selection of conductor sizes where the conditions given for Table 6 (see Clause 12) have to be modified (see notes to Table 6).
D.1 - GENERAL OPERATING CONDITIONS
D.1.1 - Ambient air temperature

The current carrying capacity for PVC insulated conductors given in Table 6 is related to an ambient air temperature of +40 °C. For other ambient air temperatures, the correction factors are given in Table D.1.

The correction factors for rubber insulated cables are given by the manufacturer.

CORRECTION FACTORS - Tab. D.1	
Ambient air temperature °C	**Correction Factor**
30	1.15
35	1.08
40	1.00
45	1.31
50	1.22
55	1.11
60	0.58

Note: The correction factors are derived from IEG 60364-5-52
The maximum temperature under normal conditions for PVC 70 DC

D.1.2 - Methods of installation

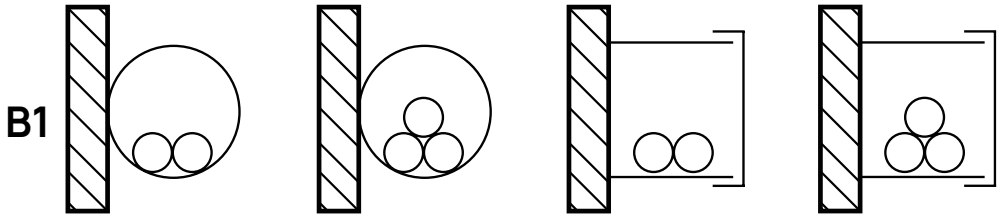
In machines, the methods of conductor and cable installation between enclosures and individual items of the equipment shown in Figure D.1 are assumed to be typical (the letters used are in accordance with IEC 60364-5-52: 2001):

• Method B1: using conduits (3.7) and cable trunking systems (3.5) for holding and protecting conductors or single core cables;

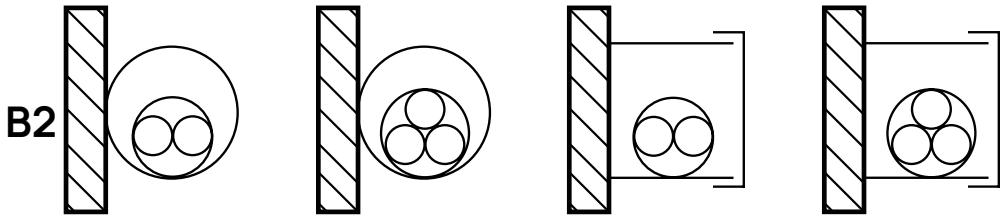
• Method B2: same as B1 but used for multicore cables;

• Method C: multicore cables installed in free air, horizontal or vertical without gap between cables on walls;

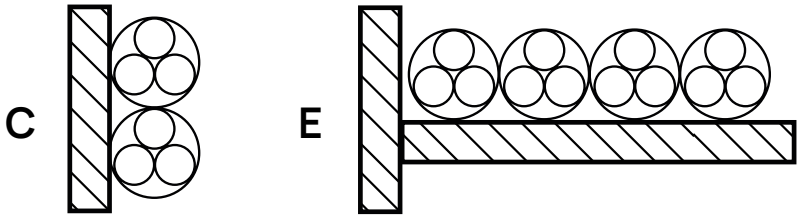
• Method E: multicore cables in free air, horizontal or vertical laid on open cable trays (3.4)



Conductors/single core cables in conduit and cable trunking systems



Cables in conduit and cable trunking systems



Cables on walls

Cables on open cable trays

Figure D.1 - Methods of conductor and cable installation independent of number of conductors/cables

EXAMPLE OF CURRENT-CARRYING CAPACITY (IZ) OF PVC INSULATED COPPER CONDUCTORS OR CABLES UNDER STEADY-STATE CONDITIONS IN AN AMBIENT AIR TEMPERATURE OF +40°C FOR DIFFERENT METHODS OF INSTALLATION

Cross Section Area mm²	Current-carrying capacity Iz for three phase circuit			
	Installation Method (see Figure D.1.2, pag 123)			
	B1	B2	C	E
1.15	8.6	8.5	9.8	10.4
1.0	10.3	10.1	11.7	12.4
1.5	13.5	13.1	15.2	16.1
2.5	18.3	17.4	21	22
4	24	23	28	30
6	31	30	36	37
10	44	40	50	52
16	59	54	66	70
25	77	70	84	88
35	96	86	104	110
50	117	103	125	133
70	149	130	160	171
95	180	156	194	207
120	208	179	225	240
Electronics (pairs)				
0.20	Not applicable	4.3	4.4	4.4
0.5	Not applicable	7.5	7.5	7.8
1.15	Not applicable	9.0	9.5	10

Note 1
The values of the current-carrying capacity of Table 6 are based on:
- One symmetrical three-phase circuit for cross-sectional areas 0,75mm2 and greater
- One control circuit pair for cross-sectional areas between 0,2mm2 and 0,75mm2

Note 2
For ambient temperature other than 40°C, correct the current-carrying capacities by using values given in Table D.1

Note 3
These values are not applicable to flexible cables wound on drums

Note 4
For the current-carrying capacities of other cables, see IEC 60364-5-52

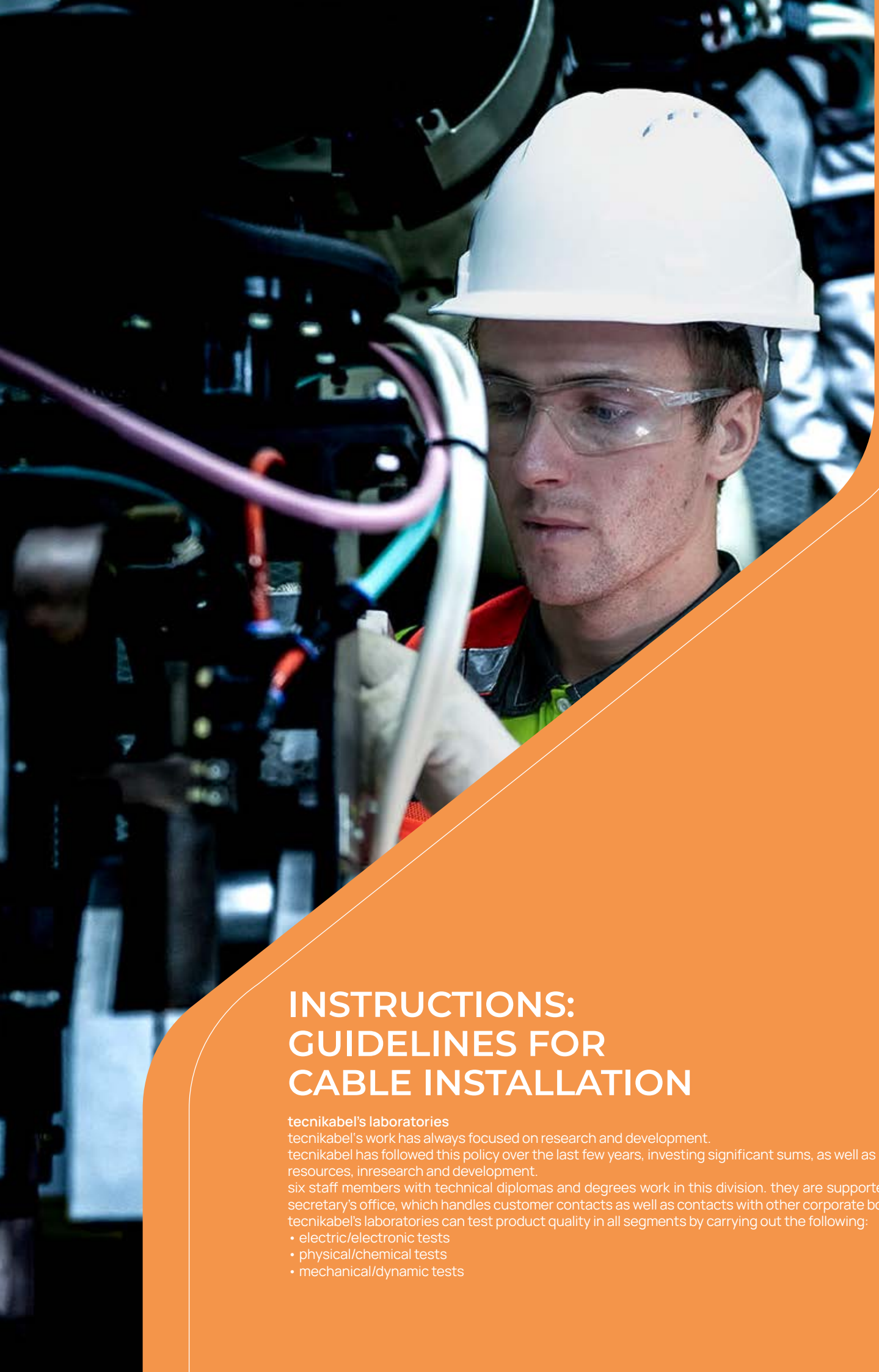
DESINA

Installation Technology in Machine Tools
COLORS and DESIGN of the FIELD-CABLES

ORANGE RAL 2003	**Power cable**: e.g. servo drives, frequency controlled drives application specific design	
GREEN RAL 6018	**Measurement cable**: e.g. measuring systems, analogue sensors application specific and case specific design	
VIOLET RAL 4001	**Hybrid-fieldbus cable**: e.g. fieldbus systems 2 x optical fibres and 4 x 1.5/2.5 mm^2 copper wires	Fibre optic: fieldbus Cu1: +24 V Cu2: 0V to PIN1 Cu3: 0V to PIN4 Cu4: +24 V switched
YELLOW RAL 1021	**Actuator-sensor cable**: e.g. fieldbus systems 4 x 0.34 mm^2, prefabricated with two M12 connectors, without LED	1: 24 V 2: signal (digital input) 3: 0V 4: signal (analogue input or digital output)
BLACK RAL 9005	**Power cable**: e.g. three-phase AC motors 5 x 1.5 mm^2 or case specific design	
GREY RAL 7040	**Control cable**: 24 V technology, e.g. control voltage, power supply multiwire, case specific design	

CABLE IDENTIFICATION TO DIN 47100

Number	Color	Number	Color
1	white	31	green-blue
2	brown	32	yellow-blue
3	grenn	33	green-red
4	yellow	34	yellow-red
5	grey	35	green-black
6	pink	36	yellow-black
7	blue	37	grey-blue
8	red	38	pink-blue
9	black	39	grey-red
10	violet	40	pink-red
11	grey-pink	41	grey-black
12	red-blue	42	pink-black
13	white-green	43	blue-black
14	brown-green	44	red-black
15	white-yellow	45	white-brown-black
16	yellow-brown	46	yellow-green-black
17	white-grey	47	grey-pink-black
18	grey-brown	48	red-blue-black
19	white-pink	49	white-green-black
20	pink-brown	50	green-brown-black
21	white-blue	51	white-yellow-black
22	brown-blue	52	yellow-brown-black
23	white-red	53	white-grey-black
24	brown-red	54	grey-brown-black
25	white-black	55	white-pink-black
26	brown-black	56	pink-brown-black
27	grey-green	57	white-blue-black
28	yellow-grey	58	brown-blue-black
29	pink-green	59	white-red-black
30	yellow-pink	60	brown-red-black
		61	black-white



These images are for illustrative purposes.

INSTRUCTIONS: GUIDELINES FOR CABLE INSTALLATION

tecnikabel's laboratories

tecnikabel's work has always focused on research and development.
tecnikabel has followed this policy over the last few years, investing significant sums, as well as human resources, inresearch and development.
six staff members with technical diplomas and degrees work in this division. they are supported by a secretary's office, which handles customer contacts as well as contacts with other corporate bodies.
tecnikabel's laboratories can test product quality in all segments by carrying out the following:

- electric/electronic tests
- physical/chemical tests
- mechanical/dynamic tests

GUIDELINES FOR CHOOSING THE RIGHT SHIELD IN YOUR CABLE

Technological innovations have brought electronics applied to automation to high levels of complexity and sophistication.

However, this has also made the the automated industry system subject to interference, both in the power supply network and in the area surrounding the plant. These types of interference are referred to as EMI (Electro Magnetic Interference), an acronym which includes coupling phenomena: electric and magnetic field (noise), electrostatic discharge (ESD), conducted disturbance on the network, emission radiated from cables and electronic devices, sensitivity to electromagnetic fields and radio frequency

interferences (RFI), etc...

This causes the automated plant to malfunction, so much as to make it dangerous for workers and objects. In order to guarantee safety, the European Community has issued Directive EMC 89/336, which has been incorporated into Machinery Directive 89/392.

A highly important element to reduce EMI is shielding on the device. In our case, it entails choosing the right type of shield, which will be used on the cables.

SHIELD TYPES

1. **Aluminium/polyester tape shield wrapped around conductors, pairs, or groups*:**
   - It offers 100% coverage and requires an uninsulated conductor touching the aluminium in order to guarantee continuity and enhance grounding for electro-static charges
   - Very effective against ESD it offers good shielding at low frequencies
   - Unsuitable for moving cables
   - Low cost
2. **SpiRAL shield wrapped around either a single or seveRAL conductors made of paRALlel strands:**
   - Has a maximum coverage of approximately 97%
   - Suitable for low frequency applications and as protection against ESD
   - Excellent for bending cables and continued bending-torsion. TECNIKABEL. In order to guarantee signal cable immunity, it has added a conductive tape to the serve shield which enhances its shielding performance, even at high frequencies.
3. **Braid shield:**
   - Has a maximum coverage of approximately 98%
   - Offers excellent mechanical resistance to repeated bending while maintaining good flexibility
   - Excellent shielding protection both at low and very high frequencies
   - Braid shields with aluminium tape provide the most complete shield:
   - Effective both at low and high frequencies
   - Excellent protection against ESD
   - Unsuitable for continuous bending torsion

CHOOSING A SHIELD

4. **The criteria to keep in mind in order to make the best choice are a compromise between the right technical solution and the price. They are:**
   - Identifying interferences: ESD, radiated interferences, electromagnetic fields, etc...
   - Defining the frequencies for the interferences found in environment and the network
   - Precise knowledge of the movements the cable will be subjected to:
   - Bending radiuses, speed, acceleration, torsion angles, etc.
   - TECNIKABEL recommends and guides its Customers, ensuring that they choose the best shield for the application provided.

a) Tape shield cables:

- For interferences generated by TV signals, crosstalk, radio signals, fluorescent lamps, etc...
- Environments with a low EMI level
- The presence of ESD generated by synthetic materials (yarns, textiles, etc...)

b) SpiRAL shield cables:

- Low frequency interferences
- Where elevated duration in terms of bending and continued torsions is required

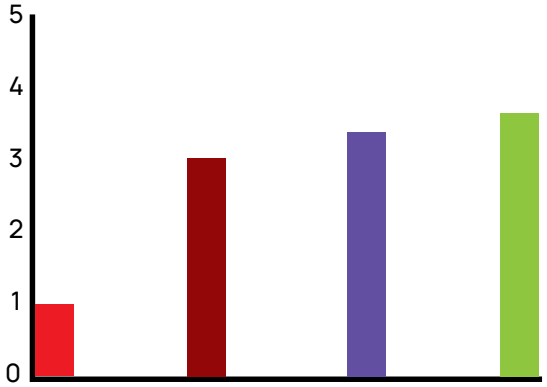
c) Braided shield cables:

- For low impedance interferences such as to power inverter motors or to intermittently power inductive loads, etc...
- Both high and low frequency interferences, such as from computer cables, cables for instruments and commands

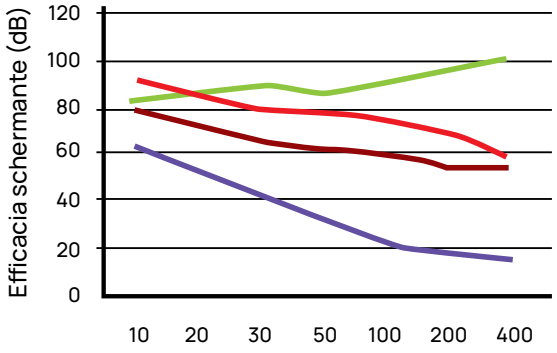
d) Braided and tape shield cables:

- Multiple interferences at low and high frequencies for environments with strong electromagnetic fields elevated background noise, etc...
- Suitable for use with bending and slight torsion for which the aluminium tape is replaced with conductive tape.

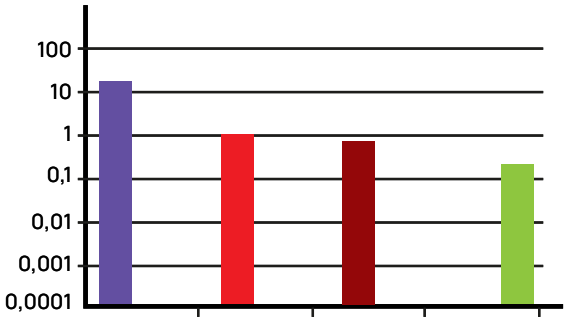
COMPARISON BETWEEN SHIELDS



EMI SHIELDING EFFICIENCY



ESD SHIELDING EFFICIENCY



Costs depend on the shield type as a component of the total cable cost.

This structure could change according to the cable project.

The ESD shielding efficacy test was made with a 15000V discharge to the ground on a length of 91cm sample.

The lower voltage improves the shielding efficiency

- Aluminium tape
- Copper braid
- Copper spiRAL
- Aluminium tape + copper braid

Tecnikabel

Passion flows through our cables

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