

eXtended Fire Resistant, instrumentation cable BFCU-XFR(i) 150/250(300)V, steel wire braided



eXtended Fire Resistant, flame retardant halogen-free instrumentation cable. Mud resistant

**BFCU-XFR(i)
150/250(300)V
MGT/EPR/EPR/GSWB/EVA**

Operating temperature : 90°C
Operating Voltage : 150/250(300)V

Application

Fixed installation for instrumentation, communication, control and alarm systems in both EX- and safe areas, emergency and critical systems where requirement for fire resistance exists. Meets the mud resistant requirements in NEK TS 606:2009. Cables have extended fire resistant (XFR) properties to IEC 60331-1&2 including water spray according to EN 50200 Annex E (90 minutes).

Standards applied

- IEC 60092-376 (2003-05) - Design
- IEC 60228 class 2 - Conductor
- IEC 60092-360 - Insulation
- IEC 60092-360 - Sheath
- IEC 60332-1-2 - Flame Retardant
- IEC 60332-3-22 - Flame Retardant
- IEC 60331-1, -2 - Fire Resistant
- EN 50200:2006 Annex E - Halogen Free
- IEC 60754-1,2 - Low Smoke
- IEC 61034-1,2

Construction

	Code Letter	
Conductor		Tinned annealed stranded circular copper (STCC), IEC 60228 class 2
Insulation	B	Mica-tape + EP-rubber, IEC 60092-360 (EPR)
Pair / Triple / Quad twisting		Color coded cores twisted together. Pairs/Triples are screened by copper backed polyester tape with tinned copper drain wire. Each pair/triple is wrapped with polyester tape to prevent electrical contact with adjacent pairs/triples. Pairs/triples are identified by numbered tape or by numbers printed directly on the insulated conductors.
Lay up / Shielding		Individually shielded pairs/triples/quads are laid up in concentric layers and wrapped with a PETP tape.
Inner covering	F	Flame retardant and halogen-free thermoplastic compound
Tape over inner covering		PET tape + rubberized Polyamide tape
Armour/screen	C	Galvanized steel wire braid
Tape over armour/screen		PET tape + rubberized Polyamide tape
Outer sheath	U	Flame retardant, halogen-free and mud resistant thermoset compound, SHF2 (IEC 60092-360)
Marking text		Eg. "meter" "year" DRAKA 01 BFCU-XFR(I) 250V 4PAIR 1.5mm ² FLEX - FLAME IEC 60092-376 EN 50200:2006 Annex E IEC 60331-1*) IEC 60331-2*) IEC 60332-3-22
Manufacturing unit		DRAKA 01 = Draka Norsk Kabel
Outer sheath colour		Grey or Blue

*) IEC 60331-1 for cables with an overall diameter exceeding 20 mm and IEC 60331-2 for cables with an overall diameter not exceeding 20 mm



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Core identification instrumentation cables

Pair - Black - Light Blue

Triple - Black - Light Blue - Brown

Quad - Black - Light Blue - Brown - Grey

Range and dimensions

Number of elements	No of cores in element	Cross section core, mm ²	Conductor Diameter, mm	Insulation Thickness, mm	Thickness Inner covering, mm	Diameter inner covering, mm	Diameter Braid Wire, mm	Mechanical cross-section of the braid, mm ²	Thickness Outer Sheath, mm	Diameter outer sheath, mm	Weight of Cable Approx. (Kg/Km)	Copper content Approx. (kg/km)
1	2	0.75	1.1	1	1.1	9.5 ± 0.5	0.3	8.5	1.1	13.5 ± 0.8	300	17
1	2	0.75	1.1	1	1.1	9.5 ± 0.5	0.3	8.5	1.1	13.5 ± 0.8	300	17
2	2	0.75	1.1	1	1.1	14.5 ± 0.8	0.3	11.9	1.3	18.5 ± 0.8	470	34
2	2	0.75	1.1	1	1.1	14.5 ± 0.8	0.3	11.9	1.3	18.5 ± 0.8	470	34
4	2	0.75	1.1	1	1.1	17 ± 0.8	0.3	13.6	1.4	21.5 ± 1	650	67
4	2	0.75	1.1	1	1.1	17 ± 0.8	0.3	13.6	1.4	21.5 ± 1	650	67
8	2	0.75	1.1	1	1.1	23.5 ± 1	0.3	17.8	1.6	28 ± 1	1060	134
8	2	0.75	1.1	1	1.1	23.5 ± 1	0.3	17.8	1.6	28 ± 1	1060	134
12	2	0.75	1.1	1	1.4	28 ± 1	0.3	20.4	1.7	33 ± 1.5	1450	200
12	2	0.75	1.1	1	1.4	28 ± 1	0.3	20.4	1.7	33 ± 1.5	1450	200
16	2	0.75	1.1	1	1.9	32.5 ± 1.5	0.3	22.9	1.8	37.5 ± 1.5	1920	267
16	2	0.75	1.1	1	1.9	32.5 ± 1.5	0.3	22.9	1.8	37.5 ± 1.5	1920	267
24	2	0.75	1.1	1	2.3	40.5 ± 2	0.46	47.9	2.1	46.5 ± 2	2980	400
24	2	0.75	1.1	1	2.3	40.5 ± 2	0.46	47.9	2.1	46.5 ± 2	2980	400
1	3	0.75	1.1	1	1.1	10.5 ± 0.8	0.3	8.5	1.1	14 ± 0.8	330	24
1	3	0.75	1.1	1	1.1	10.5 ± 0.8	0.3	8.5	1.1	14 ± 0.8	330	24
2	3	0.75	1.1	1	1.1	16 ± 0.8	0.3	11.9	1.4	20 ± 1	550	47
2	3	0.75	1.1	1	1.1	16 ± 0.8	0.3	11.9	1.4	20 ± 1	550	47
4	3	0.75	1.1	1	1.1	18.5 ± 0.8	0.3	15.3	1.4	23 ± 1	780	93
4	3	0.75	1.1	1	1.1	18.5 ± 0.8	0.3	15.3	1.4	23 ± 1	780	93
8	3	0.75	1.1	1	1.1	25 ± 1	0.3	20.4	1.7	30 ± 1.5	1310	186
8	3	0.75	1.1	1	1.1	25 ± 1	0.3	20.4	1.7	30 ± 1.5	1310	186
12	3	0.75	1.1	1	1.4	31 ± 1.5	0.3	22.9	1.8	36 ± 1.5	1810	279
12	3	0.75	1.1	1	1.4	31 ± 1.5	0.3	22.9	1.8	36 ± 1.5	1810	279
16	3	0.75	1.1	1	2.1	36 ± 1.5	0.3	25.4	1.9	41.5 ± 2	2470	371
16	3	0.75	1.1	1	2.1	36 ± 1.5	0.3	25.4	1.9	41.5 ± 2	2470	371
24	3	0.75	1.1	1	2.5	45 ± 2	0.46	53.8	2.2	51.5 ± 2.5	3770	557
24	3	0.75	1.1	1	2.5	45 ± 2	0.46	53.8	2.2	51.5 ± 2.5	3770	557
1	2	1.5	1.6	1	1.1	10.5 ± 0.8	0.3	8.5	1.2	14.5 ± 0.8	350	34
1	2	1.5	1.6	1	1.1	10.5 ± 0.8	0.3	8.5	1.2	14.5 ± 0.8	350	34
2	2	1.5	1.6	1	1.1	16 ± 0.8	0.3	11.9	1.4	20.5 ± 1	560	68
2	2	1.5	1.6	1	1.1	16 ± 0.8	0.3	11.9	1.4	20.5 ± 1	560	68
4	2	1.5	1.6	1	1.1	19 ± 0.8	0.3	15.3	1.5	23.5 ± 1	820	136
4	2	1.5	1.6	1	1.1	19 ± 0.8	0.3	15.3	1.5	23.5 ± 1	820	136
8	2	1.5	1.6	1	1.1	26 ± 1	0.3	20.4	1.7	31 ± 1.5	1360	272
8	2	1.5	1.6	1	1.1	26 ± 1	0.3	20.4	1.7	31 ± 1.5	1360	272
12	2	1.5	1.6	1	1.4	31.5 ± 1.5	0.3	22.9	1.9	37 ± 1.5	1900	408
12	2	1.5	1.6	1	1.4	31.5 ± 1.5	0.3	22.9	1.9	37 ± 1.5	1900	408

Number of elements	No of cores in element	Cross section core, mm ²	Conductor Diameter, mm	Insulation Thickness, mm	Thickness Inner covering, mm	Diameter inner covering, mm	Diameter Braid Wire, mm	Mechanical cross-section of the braid, mm ²	Thickness Outer Sheath, mm	Diameter outer sheath, mm	Weight of Cable Approx. (Kg/Km)	Copper content Approx. (kg/km)
						1.5						
16	2	1.5	1.6	1	2.1	37 ± 1.5	0.46	41.9	2.1	43 ± 2	2750	544
16	2	1.5	1.6	1	2.1	37 ± 1.5	0.46	41.9	2.1	43 ± 2	2750	544
24	2	1.5	1.6	1	2.3	45.5 ± 2	0.46	53.8	2.4	52 ± 2.5	3880	816
24	2	1.5	1.6	1	2.3	45.5 ± 2	0.46	53.8	2.4	52 ± 2.5	3880	816
1	3	1.5	1.6	1	1.1	11.5 ± 0.8	0.3	8.5	1.2	15.5 ± 0.8	390	49
1	3	1.5	1.6	1	1.1	11.5 ± 0.8	0.3	8.5	1.2	15.5 ± 0.8	390	49
2	3	1.5	1.6	1	1.1	17.5 ± 0.8	0.3	13.6	1.5	22 ± 1	680	97
2	3	1.5	1.6	1	1.1	17.5 ± 0.8	0.3	13.6	1.5	22 ± 1	680	97
4	3	1.5	1.6	1	1.1	21 ± 1	0.3	15.3	1.6	25.5 ± 1	1000	193
4	3	1.5	1.6	1	1.1	21 ± 1	0.3	15.3	1.6	25.5 ± 1	1000	193
8	3	1.5	1.6	1	1.1	28 ± 1	0.3	20.4	1.8	33 ± 1.5	1680	386
8	3	1.5	1.6	1	1.1	28 ± 1	0.3	20.4	1.8	33 ± 1.5	1680	386
12	3	1.5	1.6	1	1.6	35.5 ± 1.5	0.3	25.4	2	41 ± 2	2460	579
12	3	1.5	1.6	1	1.6	35.5 ± 1.5	0.3	25.4	2	41 ± 2	2460	579
16	3	1.5	1.6	1	2.3	41 ± 2	0.46	47.9	2.2	47.5 ± 2	3510	772
16	3	1.5	1.6	1	2.3	41 ± 2	0.46	47.9	2.2	47.5 ± 2	3510	772
24	3	1.5	1.6	1	2.7	51 ± 2.5	0.46	59.8	2.6	58 ± 2.5	5080	1157
24	3	1.5	1.6	1	2.7	51 ± 2.5	0.46	59.8	2.6	58 ± 2.5	5080	1157
1	2	2.5	2	1	1.1	11.5 ± 0.8	0.3	8.5	1.2	15.5 ± 0.8	390	55
1	2	2.5	2	1	1.1	11.5 ± 0.8	0.3	8.5	1.2	15.5 ± 0.8	390	55
2	2	2.5	2	1	1.1	17.5 ± 0.8	0.3	13.6	1.5	22 ± 1	660	109
2	2	2.5	2	1	1.1	17.5 ± 0.8	0.3	13.6	1.5	22 ± 1	660	109
4	2	2.5	2	1	1.1	20.5 ± 1	0.3	15.3	1.6	25.5 ± 1	970	218
4	2	2.5	2	1	1.1	20.5 ± 1	0.3	15.3	1.6	25.5 ± 1	970	218
8	2	2.5	2	1	1.1	28.5 ± 1	0.3	20.4	1.8	33.5 ± 1.5	1620	435
8	2	2.5	2	1	1.1	28.5 ± 1	0.3	20.4	1.8	33.5 ± 1.5	1620	435
12	2	2.5	2	1	2.3	36 ± 1.5	0.3	25.4	2	41.5 ± 2	2550	652
12	2	2.5	2	1	2.3	36 ± 1.5	0.3	25.4	2	41.5 ± 2	2550	652
16	2	2.5	2	1	2.3	40.5 ± 2	0.46	47.9	2.2	46.5 ± 2	3370	869
16	2	2.5	2	1	2.3	40.5 ± 2	0.46	47.9	2.2	46.5 ± 2	3370	869
1	3	2.5	2	1	1.1	12 ± 0.8	0.3	10.2	1.2	16 ± 0.8	450	78
1	3	2.5	2	1	1.1	12 ± 0.8	0.3	10.2	1.2	16 ± 0.8	450	78
2	3	2.5	2	1	1.1	19 ± 0.8	0.3	15.3	1.5	23.5 ± 1	790	155
2	3	2.5	2	1	1.1	19 ± 0.8	0.3	15.3	1.5	23.5 ± 1	790	155
4	3	2.5	2	1	1.1	22.5 ± 1	0.3	17.8	1.6	27.5 ± 1	1200	310
4	3	2.5	2	1	1.1	22.5 ± 1	0.3	17.8	1.6	27.5 ± 1	1200	310
8	3	2.5	2	1	1.3	30.5 ± 1.5	0.3	22.9	2	36 ± 1.5	2120	619
8	3	2.5	2	1	1.3	30.5 ± 1.5	0.3	22.9	2	36 ± 1.5	2120	619
12	3	2.5	2	1	2.6	40.5 ± 2	0.46	47.9	2.2	47 ± 2	3520	929
12	3	2.5	2	1	2.6	40.5 ± 2	0.46	47.9	2.2	47 ± 2	3520	929

Electrical values instrumentation cables

Type	Capacitance, approx. (nF/km)	Inductance, approx. (mH/km)	Resistance at 20°C, max. (Ohm/km)	L/R ratio, (microH/Ohm)
Shielded pair 0,75 mm ²	65	0,94	26,3	17,9
Shielded triple 0,75 mm ²	65	0,94	26,3	17,9
Shielded pair 1,5 mm ²	80	0,84	12,9	32,6
Shielded triple 1,5 mm ²	80	0,84	12,9	32,6
Shielded pair 2,5 mm ²	100	0,77	8,02	48
Shielded triple 2,5 mm ²	100	0,77	8,02	48

Ordering information

New Part number	Old Part number	Description	Sheath Colour	Stock item	EAN No. DNK	EL No.
	821000	BFCU-XFR(I) 1PAIR 0.75mm ²	GREY	-	7021528210002	-
	821001	BFCU-XFR(I) 1PAIR 0.75mm ²	BLUE	-	7021528210019	-
	821006	BFCU-XFR(I) 2PAIR 0.75mm ²	GREY	-	7021528210064	-
	821007	BFCU-XFR(I) 2PAIR 0.75mm ²	BLUE	-	7021528210071	-
	821018	BFCU-XFR(I) 4PAIR 0.75mm ²	GREY	-	7021528210187	-
	821019	BFCU-XFR(I) 4PAIR 0.75mm ²	BLUE	-	7021528210194	-
	821030	BFCU-XFR(I) 8PAIR 0.75mm ²	GREY	-	7021528210309	-
	821031	BFCU-XFR(I) 8PAIR 0.75mm ²	BLUE	-	7021528210316	-
	821036	BFCU-XFR(I) 12PAIR 0.75mm ²	GREY	-	7021528210361	-
	821037	BFCU-XFR(I) 12PAIR 0.75mm ²	BLUE	-	7021528210378	-
	821042	BFCU-XFR(I) 16PAIR 0.75mm ²	GREY	-	7021528210422	-
	821043	BFCU-XFR(I) 16PAIR 0.75mm ²	BLUE	-	7021528210439	-
	821048	BFCU-XFR(I) 24PAIR 0.75mm ²	GREY	-	7021528210484	-
	821049	BFCU-XFR(I) 24PAIR 0.75mm ²	BLUE	-	7021528210491	-
	821060	BFCU-XFR(I) 1TRIP 0.75mm ²	GREY	-	7021528210606	-
	821061	BFCU-XFR(I) 1TRIP 0.75mm ²	BLUE	-	7021528210613	-
	821066	BFCU-XFR(I) 2TRIP 0.75mm ²	GREY	-	7021528210668	-
	821067	BFCU-XFR(I) 2TRIP 0.75mm ²	BLUE	-	7021528210675	-
	821078	BFCU-XFR(I) 4TRIP 0.75mm ²	GREY	-	7021528210781	-
	821079	BFCU-XFR(I) 4TRIP 0.75mm ²	BLUE	-	7021528210798	-
	821090	BFCU-XFR(I) 8TRIP 0.75mm ²	GREY	-	7021528210903	-
	821091	BFCU-XFR(I) 8TRIP 0.75mm ²	BLUE	-	7021528210910	-
	821096	BFCU-XFR(I) 12TRIP 0.75mm ²	GREY	-	7021528210965	-
	821097	BFCU-XFR(I) 12TRIP 0.75mm ²	BLUE	-	7021528210972	-
	821102	BFCU-XFR(I) 16TRIP 0.75mm ²	GREY	-	7021528211023	-
	821103	BFCU-XFR(I) 16TRIP 0.75mm ²	BLUE	-	7021528211030	-
	821108	BFCU-XFR(I) 24TRIP 0.75mm ²	GREY	-	7021528211085	-
	821109	BFCU-XFR(I) 24TRIP 0.75mm ²	BLUE	-	7021528211092	-
	821400	BFCU-XFR(I) 1PAIR 1.5mm ²	GREY	-	7021528214000	-
	821401	BFCU-XFR(I) 1PAIR 1.5mm ²	BLUE	-	7021528214017	-
	821406	BFCU-XFR(I) 2PAIR 1.5mm ²	GREY	-	7021528214062	-
	821407	BFCU-XFR(I) 2PAIR 1.5mm ²	BLUE	-	7021528214079	-
	821418	BFCU-XFR(I) 4PAIR 1.5mm ²	GREY	-	7021528214185	-
	821419	BFCU-XFR(I) 4PAIR 1.5mm ²	BLUE	-	7021528214192	-
	821430	BFCU-XFR(I) 8PAIR 1.5mm ²	GREY	-	7021528214307	-
	821431	BFCU-XFR(I) 8PAIR 1.5mm ²	BLUE	-	7021528214314	-
	821436	BFCU-XFR(I) 12PAIR 1.5mm ²	GREY	-	7021528214369	-
	821437	BFCU-XFR(I) 12PAIR 1.5mm ²	BLUE	-	7021528214376	-
	821442	BFCU-XFR(I) 16PAIR 1.5mm ²	GREY	-	7021528214420	-
	821443	BFCU-XFR(I) 16PAIR 1.5mm ²	BLUE	-	7021528214437	-
	821448	BFCU-XFR(I) 24PAIR 1.5mm ²	GREY	-	7021528214482	-
	821449	BFCU-XFR(I) 24PAIR 1.5mm ²	BLUE	-	7021528214499	-
	821460	BFCU-XFR(I) 1TRIP 1.5mm ²	GREY	-	7021528214604	-
	821461	BFCU-XFR(I) 1TRIP 1.5mm ²	BLUE	-	7021528214611	-
	821466	BFCU-XFR(I) 2TRIP 1.5mm ²	GREY	-	7021528214666	-

New Part number	Old Part number	Description	Sheath Colour	Stock item	EAN No. DNK	EL No.
	821467	BFCU-XFR(I) 2TRIP 1.5mm ²	BLUE	-	7021528214673	-
	821478	BFCU-XFR(I) 4TRIP 1.5mm ²	GREY	-	7021528214789	-
	821479	BFCU-XFR(I) 4TRIP 1.5mm ²	BLUE	-	7021528214796	-
	821490	BFCU-XFR(I) 8TRIP 1.5mm ²	GREY	-	7021528214901	-
	821491	BFCU-XFR(I) 8TRIP 1.5mm ²	BLUE	-	7021528214918	-
	821496	BFCU-XFR(I) 12TRIP 1.5mm ²	GREY	-	7021528214963	-
	821497	BFCU-XFR(I) 12TRIP 1.5mm ²	BLUE	-	7021528214970	-
	821502	BFCU-XFR(I) 16TRIP 1.5mm ²	GREY	-	7021528215021	-
	821503	BFCU-XFR(I) 16TRIP 1.5mm ²	BLUE	-	7021528215038	-
	821508	BFCU-XFR(I) 24TRIP 1.5mm ²	GREY	-	7021528215083	-
	821509	BFCU-XFR(I) 24TRIP 1.5mm ²	BLUE	-	7021528215090	-
	828700	BFCU-XFR(I) 1PAIR 2.5mm ²	GREY	-	7021528287004	-
	828701	BFCU-XFR(I) 1PAIR 2.5mm ²	BLUE	-	7021528287011	-
	828706	BFCU-XFR(I) 2PAIR 2.5mm ²	GREY	-	7021528287066	-
	828707	BFCU-XFR(I) 2PAIR 2.5mm ²	BLUE	-	7021528287073	-
	828718	BFCU-XFR(I) 4PAIR 2.5mm ²	GREY	-	7021528287189	-
	828719	BFCU-XFR(I) 4PAIR 2.5mm ²	BLUE	-	7021528287196	-
	828730	BFCU-XFR(I) 8PAIR 2.5mm ²	GREY	-	7021528287301	-
	828731	BFCU-XFR(I) 8PAIR 2.5mm ²	BLUE	-	7021528287318	-
	828736	BFCU-XFR(I) 12PAIR 2.5mm ²	GREY	-	7021528287363	-
	828737	BFCU-XFR(I) 12PAIR 2.5mm ²	BLUE	-	7021528287370	-
	828742	BFCU-XFR(I) 16PAIR 2.5mm ²	GREY	-	7021528287424	-
	828743	BFCU-XFR(I) 16PAIR 2.5mm ²	BLUE	-	7021528287431	-
	828760	BFCU-XFR(I) 1TRIP 2.5mm ²	GREY	-	7021528287608	-
	828761	BFCU-XFR(I) 1TRIP 2.5mm ²	BLUE	-	7021528287615	-
	828766	BFCU-XFR(I) 2TRIP 2.5mm ²	GREY	-	7021528287660	-
	828767	BFCU-XFR(I) 2TRIP 2.5mm ²	BLUE	-	7021528287677	-
	828778	BFCU-XFR(I) 4TRIP 2.5mm ²	GREY	-	7021528287783	-
	828779	BFCU-XFR(I) 4TRIP 2.5mm ²	BLUE	-	7021528287790	-
	828790	BFCU-XFR(I) 8TRIP 2.5mm ²	GREY	-	7021528287905	-
	828791	BFCU-XFR(I) 8TRIP 2.5mm ²	BLUE	-	7021528287912	-
	828796	BFCU-XFR(I) 12TRIP 2.5mm ²	GREY	-	7021528287967	-
	828797	BFCU-XFR(I) 12TRIP 2.5mm ²	BLUE	-	7021528287974	-

Installation recommendations

Minimum Bending Radius during Installation	Minimum Bending Radius Fixed Installed	Maximum Tensile Load During Installation	Minimum Installation Temperature
8 x D	6 x D	50 N /mm ²	-20°C



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+44 (0) 191 410 4292
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