



Caledonian

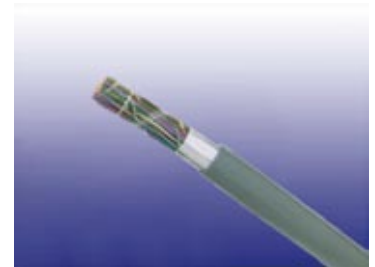
INDOOR TELEPHONE CABLES

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Indoor Switchboard Telephone Cables to CW 1293

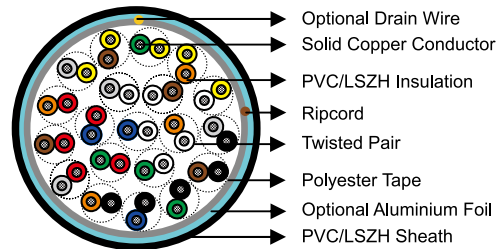
APPLICATION

The cables are designed to handle low frequency signals for short range applications, suitable for cross connecting individual items of switchboard equipment and to connect exchanges with internal distribution points. The cables are intended to be terminated in Insulation/displacement Connectors (IDC).



STANDARDS

- CW 1293
- IEC 60189-2
- IEC 60332-1
- UL1581 VW-1 & UL1666
- IEEE 383CI.IE



CONSTRUCTION

- **Conductors:** Solid annealed bare copper 0.4/0.5/0.6/0.9mm as per class 1 of BS 6360 and IEC 60228.
- **Insulation:** Colour coded PVC T154 to BS 7878 or equivalent. LSZH option can be offered upon request.
- **Twisted Pairs:** Insulated conductors are twisted into pairs with varying lay length to minimize crosstalk.
- **Cabling Element:** Twisted Pairs/Triples/Quads.
- **Cable Core Assembly:** There are two modes of construction: layer construction and unit construction. For layer construction, cables are laid up in concentric layers to form a compact and circular cable. For unit construction, the elements shall be pairs and shall be laid up as units or sub-units. Each unit shall consist of 20 pair.
- **Core Wrapping:** Cable containing more than 12 wires has a polyester tape applied over the cable core prior to sheathing.
- **Screen (optional):** An aluminium polyester foil shield can be provided for fully enclosing the core with an overlap.
- **Sheath:** PVC TM51 to BS 7878 or equivalent. Grey, White or Cream colours are standard. LSZH option can be offered upon request.
- **Ripcord:** Nylon ripcord may be placed parallel to the cores to facilitate sheath removal.
- **Drain Wire (optional):** For screened cables, a solid tinned copper drain wire may be longitudinally laid to ensure electrical continuity of the screen.

ELECTRICAL PROPERTIES

Nominal Conductor Diameter	mm	0.4	0.5	0.6	0.9
Conductor Size	mm ²	0.126	0.196	0.28	0.636
Maximum Conductor Resistance @20°C	Ω/km	153	97.8	67.9	29.6
Minimum Insulation Resistance @500V DC @20°C	MΩ.km	50	50	50	50
Maximum Capacitance Unbalance pair-to-pair *	pF/500m	*200/300	500	300	300
Minimum Insulation Thickness	mm	0.15	0.15	0.15	0.25
Maximum Insulated Conductor Diameter	mm	0.85	0.95	1.05	1.6

* For 25, 50 & 100 pair 0.4mm conductor size

MECHANICAL AND THERMAL PROPERTIES

Temperature range during operation (fixed state): -30°C – +70°C

Temperature range during installation (mobile state): -20°C – +50°C

Minimum bending radius: 7.5 x Overall Diameter

COLOUR CODE

The pair colour scheme for these cables complies with IEC 189-2 & 189-3 given in the Colour Code Chart below, with the exception of the 2 pair cable, which is constructed as a quad and a colour scheme of Blue, Green, Orange and Brown respectively.

Make-up & Unit Identification Colours – 20 Pair Unit

Pair Size	20 Pairs	40 Pairs	80 Pairs	160 Pairs	320 Pairs
	Number of Units				
Center	1	4 x ½	1	4 x ½	1
1st Layer			6 x ½	6	5
2nd Layer					10
Colours of Unit Lappings					
1	ORANGE	ORANGE	ORANGE	ORANGE	ORANGE
2		GREEN	ORANGE	GREEN	ORANGE
3			NATURAL	ORANGE	NATURAL
4			GREEN	NATURAL	NATURAL
5				NATURAL	NATURAL
6				NATURAL	GREEN
7				NATURAL	ORANGE
8				GREEN	NATURAL
9 – 15					NATURAL
16					GREEN

Note 1: ½ refers to sub-units of 10 Pairs.

Colour Scheme for Pairs & Triples

Cabling Element No.	a-wire	b-wire	Cabling Element No.	a-wire	b-wire	Cabling Element No.	a-wire	b-wire
1	WHITE	BLUE	41	WHITE	Orange	81	WHITE	Brown
2	WHITE	ORANGE	42	WHITE	Orange	82	WHITE	Brown
3	WHITE	GREEN	43	WHITE	Orange	83	WHITE	Brown
4	WHITE	BROWN	44	WHITE	Orange	84	WHITE	Brown
5	WHITE	GREY	45	WHITE	Orange	85	WHITE	Brown
6	RED	BLUE	46	ORANGE	Red	86	RED	Brown
7	RED	ORANGE	47	ORANGE	Red	87	RED	Brown
8	RED	GREEN	48	ORANGE	Red	88	RED	Brown
9	RED	BROWN	49	ORANGE	Red	89	RED	Brown
10	RED	GREY	50	ORANGE	Red	90	RED	Brown
11	BLACK	BLUE	51	ORANGE	Black	91	BROWN	Black
12	BLACK	ORANGE	52	ORANGE	Black	92	BROWN	Black
13	BLACK	GREEN	53	ORANGE	Black	93	BROWN	Black
14	BLACK	BROWN	54	ORANGE	Black	94	BROWN	Black
15	BLACK	GREY	55	ORANGE	Black	95	BROWN	Black
16	YELLOW	BLUE	56	YELLOW	Orange	96	YELLOW	Brown
17	YELLOW	ORANGE	57	YELLOW	Orange	97	YELLOW	Brown



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18	YELLOW	GREEN	58	YELLOW	Orange	GREEN	98	YELLOW	Brown	GREEN	
19	YELLOW	BROWN	59	YELLOW	Orange	BROWN	99	YELLOW	Brown	BROWN	
20	YELLOW	GREY	60	YELLOW	Orange	GREY	100	YELLOW	Brown	GREY	
21	WHITE	Blue	BLUE	61	WHITE	Green	BLUE	101	WHITE	Grey	BLUE
22	WHITE	Blue	ORANGE	62	WHITE	Green	ORANGE	102	WHITE	Grey	ORANGE
23	WHITE	Blue	GREEN	63	WHITE	Green	GREEN	103	WHITE	Grey	GREEN
24	WHITE	Blue	BROWN	64	WHITE-	Green	BROWN	104	WHITE	Grey	BROWN
25	WHITE	Blue	GREY	65	WHITE	Green	GREY	105	WHITE	Grey	GREY
26	RED	Blue	BLUE	66	GREEN	Red	BLUE	106	GREY	Red	BLUE
27	RED	Blue	ORANGE	67	GREEN	Red	ORANGE	107	GREY	Red	ORANGE
28	RED	Blue	GREEN	68	GREEN	Red	GREEN	108	GREY	Red	GREEN
29	RED	Blue	BROWN	69	GREEN	Red	BROWN	109	GREY	Red	BROWN
30	RED	Blue	GREY	70	GREEN	Red	GREY	110	GREY	Red	GREY
31	BLUE	Black	BLUE	71	GREEN	Black	BLUE	111	GREY	Black	BLUE
32	BLUE	Black	ORANGE	72	GREEN	Black	ORANGE	112	GREY	Black	ORANGE
33	BLUE	Black	GREEN	73	GREEN	Black	GREEN	113	GREY	Black	GREEN
34	BLUE	Black	BROWN	74	GREEN	Black	BROWN	114	GREY	Black	BROWN
35	BLUE	Black	GREY	75	GREEN	Black	GREY	115	GREY	Black	GREY
36	YELLOW	Blue	BLUE	76	YELLOW	Green	BLUE	116	YELLOW	Grey	BLUE
37	YELLOW	Blue	ORANGE	77	YELLOW	Green	ORANGE	117	YELLOW	Grey	ORANGE
38	YELLOW	Blue	GREEN	78	YELLOW	Green	GREEN	118	YELLOW	Grey	GREEN
39	YELLOW	Blue	BROWN	79	YELLOW	Green	BROWN	119	YELLOW	Grey	BROWN
40	YELLOW	Blue	GREY	80	YELLOW	Green	GREY	120	YELLOW	Grey	GREY

Note 1: In each triple there shall be a c-wire, coloured Turquoise.

Note 2: Uppercase letters indicate the base, solid colour of insulation, and the lower case indicates ink bands applied onto the base colour.

DIMENSIONS AND WEIGHT

Cable Code	Number of Pairs	Make Up	Minimum Insulation Thickness mm	Minimum Sheath Thickness mm	Maximum Overall Diameter mm	Nominal Weight kg/km
0.4mm Conductor, 0.85mm Insulated Wire-Pair Wires						
TP1293-YY-1P04	1	Layer	0.15	0.4	3.3	10
TP1293-YY-3P04	3	Layer	0.15	0.5	5.3	15
TP1293-YY-6P04	6	Layer	0.15	0.6	6.8	37
TP1293-YY-10P04	10	Layer	0.15	0.6	8.3	54
TP1293-YY-12P04	12	Layer	0.15	0.7	8.9	61
TP1293-YY-16P04	16	Layer	0.15	0.7	9.8	80
TP1293-YY-20P04	20	Layer	0.15	0.7	10.4	95
TP1293-YY-25P04	25	Layer	0.15	0.8	11.1	115
TP1293-YY-40P04	40	Layer	0.15	0.9	13.8	200
TP1293-YY-50P04	50	Layer	0.15	0.9	14.1	225
TP1293-YY-60P04	60	Layer	0.15	1.0	15.8	245
TP1293-YY-72P04	72	Layer	0.15	1.1	17.3	285
TP1293-YY-100P04	100	Layer	0.15	1.2	20.1	415
0.5mm Conductor, 0.95mm Insulated Wire-Pair Wires						
TP1293-YY-1P05	1	Layer	0.15	0.4	3.3	12
TP1293-YY-2P05	2	Layer	0.15	0.4	4.0	25

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Cable Code	Number of Pairs	Make Up	Minimum Insulation Thickness mm	Minimum Sheath Thickness mm	Maximum Overall Diameter mm	Nominal Weight kg/km
TP1293-YY-3P05	3	Layer	0.15	0.5	5.3	30
TP1293-YY-4P05	4	Layer	0.15	0.5	5.8	40
TP1293-YY-6P05	6	Layer	0.15	0.6	6.8	50
TP1293-YY-8P05	8	Layer	0.15	0.6	7.6	65
TP1293-YY-10P05	10	Layer	0.15	0.6	8.3	75
TP1293-YY-12P05	12	Layer	0.15	0.7	9.1	98
TP1293-YY-15P05	15	Layer	0.15	0.7	9.8	110
TP1293-YY-16P05	16	Layer	0.15	0.7	10.0	115
TP1293-YY-20P05	20	Layer	0.15	0.7	10.7	140
TP1293-YY-20P05U	20	Unit	0.15	0.7	10.7	141
TP1293-YY-(20+1)P05	20+1	Layer	0.15	0.7	10.7	146
TP1293-YY-24P05	24	Layer	0.15	0.8	11.3	160
TP1293-YY-25P05	25	Layer	0.15	0.8	11.4	165
TP1293-YY-28P05	28	Layer	0.15	0.8	11.5	180
TP1293-YY-30P05	30	Layer	0.15	0.8	12.2	190
TP1293-YY-40P05	40	Layer	0.15	0.9	14.2	250
TP1293-YY-42P05	42	Layer	0.15	1.0	14.5	260
TP1293-YY-50P05	50	Layer	0.15	1.0	15.7	320
TP1293-YY-53P05	53	Layer	0.15	1.0	15.9	330
TP1293-YY-60P05	60	Layer	0.15	1.0	16.3	380
TP1293-YY-75P05	75	Layer	0.15	1.1	17.8	440
TP1293-YY-80P05	80	Layer	0.15	1.2	21.8	500
TP1293-YY-80P05U	80	Unit	0.15	1.2	21.8	500
TP1293-YY-100P05	100	Layer	0.15	1.4	22.6	635
TP1293-YY-120P05	120	Layer	0.15	1.5	25.2	770
TP1293-YY-160P05U	160	Unit	0.15	1.7	29.8	1175
TP1293-YY-320P05U	320	Unit	0.15	2.2	39.1	2255
0.6mm Conductor, 1.05mm Insulated Wire-Pair Wires						
TP1293-YY-3P06	3	Layer	0.15	0.5	5.3	40
TP1293-YY-6P06	6	Layer	0.15	0.6	7.1	66
TP1293-YY-10P06	10	Layer	0.15	0.7	8.9	99
TP1293-YY-20P06	20	Layer	0.15	0.8	11.2	193
TP1293-YY-40P06	40	Layer	0.15	1.0	15.5	350
TP1293-YY-50P06	50	Layer	0.15	1.1	16.5	434
TP1293-YY-60P06	60	Layer	0.15	1.1	18.0	510
TP1293-YY-80P06	80	Layer	0.15	1.3	22.0	700
TP1293-YY-100P06	100	Layer	0.15	1.5	24.6	810
0.9mm Conductor, 1.6mm Insulated Wire-Pair Wires						
TP1293-YY-1C09	1 Wire	N/A	0.25	0.4	3.0	25
TP1293-YY-2P09	2	Layer	0.25	0.5	4.5	50
TP1293-YY-6P09	6	Layer	0.25	0.6	7.6	100
TP1293-YY-12P09	12	Layer	0.25	0.8	10.1	225
TP1293-YY-20P09	20	Layer	0.25	0.9	12.7	322
TP1293-YY-24P09	24	Layer	0.25	0.9	12.9	370



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Cable Code	Number of Triples	Make Up	Minimum Insulation Thickness mm	Minimum Sheath Thickness mm	Maximum Overall Diameter mm	Nominal Weight kg/km
0.4mm Conductor, 0.85mm Insulated Wire-Triple Wires						
TP1293-YY-6T04	6	Layer	0.15	0.6	7.9	50
TP1293-YY-10T04	10	Layer	0.15	0.7	9.6	80
TP1293-YY-20T04	20	Layer	0.15	0.8	11.8	145
0.5mm Conductor, 0.95mm Insulated Wire-Triple Wires						
TP1293-YY-1T05	1	Layer	0.15	0.4	3.5	20
TP1293-YY-10T05	10	Layer	0.15	0.7	9.8	115
TP1293-YY-20T05	20	Layer	0.15	0.8	12.2	190
TP1293-YY-(20+1)T05	20+1	Layer	0.15	0.8	12.2	205
TP1293-YY-25T05	25	Layer	0.15	0.9	12.9	250
TP1293-YY-35T05	35	Layer	0.15	0.9	13.4	325
TP1293-YY-40T05	40	Layer	0.15	1.0	16.3	380
TP1293-YY-46T05	46	Layer	0.15	1.1	17.2	430
TP1293-YY-50T05	50	Layer	0.15	1.1	17.8	505
TP1293-YY-100T05	100	Layer	0.15	1.7	29.0	950
0.6mm Conductor, 1.05mm Insulated Wire-Triple Wires						
TP1293-YY-1T06	1	Layer	0.15	0.4	3.7	27
TP1293-YY-10T06	10	Layer	0.15	0.8	10.1	167
TP1293-YY-20T06	20	Layer	0.15	0.9	13.4	270
TP1293-YY-25T06	25	Layer	0.15	1.0	15.0	360
TP1293-YY-40T06	40	Layer	0.15	1.1	18.0	530
TP1293-YY-46T06	46	Layer	0.15	1.2	19.3	600
TP1293-YY-50T06	50	Layer	0.15	1.2	19.3	700

Cable Code	Number of Pairs & Triples	Make Up	Minimum Insulation Thickness mm	Minimum Sheath Thickness mm	Maximum Overall Diameter mm	Nominal Weight kg/km
0.4mm Conductor, 0.85mm Insulated Wire-Pair & Triple Wires						
TP1293-YY-10P10T04	10	Layer	0.15	0.8	11.1	115
0.5mm Conductor, 0.95mm Insulated Wire-Pair & Triple Wires						
TP1293-YY-10P10T05	10	Layer	0.15	0.8	11.4	165
TP1293-YY-20P10T05	20	Layer	0.15	1.0	15.7	320
TP1293-YY-25P10T05	25	Layer	0.15	1.1	16.7	410
TP1293-YY-50P10T05	50	Layer	0.15	1.6	27.2	950
0.6mm Conductor, 1.05mm Insulated Wire-Pair & Triple Wires						
TP1293-YY-10P10T06	10	Layer	0.15	0.9	12.9	230
TP1293-YY-20P10T06	20	Layer	0.15	1.1	16.5	430
TP1293-YY-25P10T06	25	Layer	0.15	1.2	18.5	520