

Colour Codes & Cable Make Up

1. A) Colour Code According to IEC 189-3

Standard Colours	Easily Identifiable Combinations		Less-easily Identifiable Combinations	
BLUE	RED	Black	BROWN	Black
ORANGE	RED	Blue	ORANGE	Black
GREEN	ORANGE	Green	ORANGE	Grey
BROWN	ORANGE	Blue	GREEN	Grey
GREY	ORANGE	Violet	GREEN	Violet
WHITE	YELLOW	Black	VIOLET	Black
RED	YELLOW	Red	GREY	Black
BLACK	YELLOW	Green **	GREY	Violet
YELLOW	YELLOW	Blue	WHITE	Brown
VIOLET	YELLOW	Violet	WHITE	Orange
PINK	GREEN	Black	WHITE	Violet
TURQUOISE	GREEN	Red	GREEN	Blue
	BLUE	Black	BROWN	Blue
	GREY	Red	GREY	Brown
	GREY	Blue	GREEN	Brown
	WHITE	Black	WHITE	Grey
	WHITE	Red	ORANGE	Brown
	WHITE	Green	ORANGE	Red
	WHITE	Blue	RED	Brown
			WHITE	Yellow

**NOTE: The colour YELLOW-Green should be reserved for earth or safety wires

1. B) Colour Code & Cable Make Up According to ICEA S-80-576

Pair No.	a-wire		b-wire		Pair No.	a-wire		b-wire	
1	WHITE	Blue	BLUE	White	13	BLACK	Green	GREEN	Black
2	WHITE	Orange	ORANGE	White	14	BLACK	Brown	BROWN	Black
3	WHITE	Green	GREEN	White	15	BLACK	Grey	GREY	Black
4	WHITE	Brown	BROWN	White	16	YELLOW	Blue	BLUE	Yellow
5	WHITE	Grey	GREY	White	17	YELLOW	Orange	ORANGE	Yellow
6	RED	Blue	BLUE	Red	18	YELLOW	Green	GREEN	Yellow
7	RED	Orange	ORANGE	Red	19	YELLOW	Brown	BROWN	Yellow

8	RED	Green	GREEN	Red	20	YELLOW	Grey	GREY	Yellow
9	RED	Brown	BROWN	Red	21	VIOLET	Blue	BLUE	Violet
10	RED	Grey	GREY	Red	22	VIOLET	Orange	ORANGE	Violet
11	BLACK	Blue	BLUE	Black	23	VIOLET	Green	GREEN	Violet
12	BLACK	Orange	ORANGE	Black	24	VIOLET	Brown	BROWN	Violet
					25	VIOLET	Grey	GREY	Violet

In accordance with ICEA publication S-80-576-2002, the colour code is composed of ten (10) distinctive colours to identify 25 pairs. Marking of each mate of the primary conductor in a pair with the colour of that primary conductor is optional.

When cables of larger than 25 pairs are required, the core shall be assembled into 25-pair sub-units, each colour coded in accordance with ICEA publication S-80-576. Cables with over 600 pairs shall have 25-pair binder groups combined into super units. These super units shall be wrapped with a solid colour thread that follows the primary colour scheme of white, red, black, yellow and violet. Binder colour code integrity shall be maintained wherever cables are spliced.

1. **C) Colour Code According to IEC 60189-2, BT210B**

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	35	BLUE	Black	69	GREEN	Red
2	WHITE	ORANGE	36	YELLOW	Blue	70	GREEN	Red
3	WHITE	GREEN	37	YELLOW	Blue	71	GREEN	Black
4	WHITE	BROWN	38	YELLOW	Blue	72	GREEN	Black
5	WHITE	GREY	39	YELLOW	Blue	73	GREEN	Black
6	RED	BLUE	40	YELLOW	Blue	74	GREEN	Black
7	RED	ORANGE	41	WHITE	Orange	75	GREEN	Black
8	RED	GREEN	42	WHITE	Orange	76	YELLOW	Green
9	RED	BROWN	43	WHITE	Orange	77	YELLOW	Green
10	RED	GREY	44	WHITE	Orange	78	YELLOW	Green

11	BLACK	BLUE	45	WHITE	Orange	GREY	79	YELLOW	Green	BROWN	
12	BLACK	ORANGE	46	ORANGE	Red	BLUE	80	YELLOW	Green	GREY	
13	BLACK	GREEN	47	ORANGE	Red	ORANGE	81	WHITE	Brown	BLUE	
14	BLACK	BROWN	48	ORANGE	Red	GREEN	82	WHITE	Brown	ORANGE	
15	BLACK	GREY	49	ORANGE	Red	BROWN	83	WHITE	Brown	GREEN	
16	YELLOW	BLUE	50	ORANGE	Red	GREY	84	WHITE	Brown	BROWN	
17	YELLOW	ORANGE	51	ORANGE	Black	BLUE	85	WHITE	Brown	GREY	
18	YELLOW	GREEN	52	ORANGE	Black	ORANGE	86	RED	Brown	BLUE	
19	YELLOW	BROWN	53	ORANGE	Black	GREEN	87	RED	Brown	ORANGE	
20	YELLOW	GREY	54	ORANGE	Black	BROWN	88	RED	Brown	GREEN	
21	WHITE	Blue	BLUE	55	ORANGE	Black	GREY	89	RED	Brown	BROWN
22	WHITE	Blue	ORANGE	56	YELLOW	Orange	BLUE	90	RED	Brown	GREY
23	WHITE	Blue	GREEN	57	YELLOW	Orange	ORANGE	91	BROWN	Black	BLUE
24	WHITE	Blue	BROWN	58	YELLOW	Orange	GREEN	92	BROWN	Black	ORANGE
25	WHITE	Blue	GREY	59	YELLOW	Orange	BROWN	93	BROWN	Black	GREEN
26	RED	Blue	BLUE	60	YELLOW	Orange	GREY	94	BROWN	Black	BROWN
27	RED	Blue	ORANGE	61	WHITE	Green	BLUE	95	BROWN	Black	GREY
28	RED	Blue	GREEN	62	WHITE	Green	ORANGE	96	YELLOW	Brown	BLUE
29	RED	Blue	BROWN	63	WHITE	Green	GREEN	97	YELLOW	Brown	ORANGE
30	RED	Blue	GREY	64	WHITE	Green	BROWN	98	YELLOW	Brown	GREEN

31	BLUE	Black	BLUE	65	WHITE	Green	GREY	99	YELLOW	Brown	BROWN
32	BLUE	Black	ORANGE	66	GREEN	Red	BLUE	100	YELLOW	Brown	GREY
33	BLUE	Black	GREEN	67	GREEN	Red	ORANGE	101	WHITE	Grey	BLUE
34	BLUE	Black	BROWN	68	GREEN	Red	GREEN	102	WHITE	Grey	ORANGE

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.

Make-up & Unit Identification Colours – 20 Pair Unit

Pair Size		Center	1st Layer	2nd Layer	1	2	3	4	5	6	7	8	9-15	16
20P air	Number of Unit	1			ORANGE									
40P air		4 x ½			ORANGE	GREEN								
80P air		1	6 x ½		ORANGE	ORANGE	NATURAL	GREEN						
160 Pair		4 x ½	6		ORANGE	GREEN	ORANGE	NATURAL	NATURAL	NATURAL	NATURAL	GREEN		
320 Pair		1	5	10	ORANGE	ORANGE	NATURAL	NATURAL	NATURAL	GREEN	ORANGE	NATURAL	NATURAL	GREEN

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

1. **D) Colour Code & Cable Make Up According to CW 1171, CW 1224, CW 1236**

Colour Scheme for Pairs

Pair No.	a-wire	b-wire	Pair No.	a-wire	b-wire
1	WHITE	BLUE	13	BLACK	GREEN
2	WHITE	ORANGE	14	BLACK	BROWN
3	WHITE	GREEN	15	BLACK	GREY
4	WHITE	BROWN	16	YELLOW	BLUE
5	WHITE	GREY	17	YELLOW	ORANGE
6	RED	BLUE	18	YELLOW	GREEN
7	RED	ORANGE	19	YELLOW	BROWN
8	RED	GREEN	20	YELLOW	GREY
9	RED	BROWN	21	VIOLET	BLUE
10	RED	GREY	22	VIOLET	ORANGE

11	BLACK	BLUE	23	VIOLET	GREEN
12	BLACK	ORANGE	24	VIOLET	BROWN
			25	VIOLET	GREY

Binder Colour Identification (Double & Quadruple Units)

Unit	Position of Sub-unit or Unit			
	First	Second	Third	Fourth
Double	BLUE	BLUE	ORANGE	ORANGE
Quadruple	BLUE	ORANGE	GREEN	BROWN

Binder Colour Identification (Centre & Layers)

Position of Units		
First	Intermediate	Last
RED	NATURAL	GREEN

Cable Size	Number&Pair Sizes of Units in Centre and successive Layers				No.of Pair in Spare Pair Unit	No.of Unusable Pairs Allowed
	Centre	1st Layer	2nd Layer	3rd Layer		
50	1x50				0	1
100	1x25 1x100	3x(12+13)			0	1
200	1x50 4x50	6x25			4	2
300	1x50 1x100	5x50 8x25			4	3
400	1x100	6x50			4	3
500	3x50 1x100	7x50 8x50			4	4
600	3x50 1x100	9x50 5x100			4	4
800	1x50 4x50	5x50 6x100	10x50		4	5
1000	4x50 3x100	8x100 7x100			4	5
1200	3x100 4x100	9x100 8x100			4	5
1600	1x100	5x100	10x100		4	6
2000	4x50	6x100	12x100		8	6
2400	3x100	8x100	13x100		8	7
3200	1x100	5x100	10x100	16x100	8	7
4000	3x100	7x100	12x100	18x100	8	8

4800	4x100	9x100	15x100	20x100	8	8
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Note: Alternative make-ups are shown for some sizes and as a further alternative any cable can be made-up using 25 Pair Units throughout.

1. E) Colour Code & Cable Make Up According to DIN VDE 0815 & 0816

DIN VDE 0815 for Installation Cables

1) VDE 0815 and VDE 0816 Unit Twisted

Colour Code for the following Installation Cable Types:

J-YY . . . Bd, J-HH . . . Bd, J-Y(St)Y . . . Bd,

J-H(St)H . . . Bd and J-2Y(St)Y . . . Bd

Star-quad bundles

The insulating coverings of single cores of a star quad are marked with black rings.

The cores of 5 star quads of a sub unit are counted according to the sequence of basic colours:

Quad 1: basic colour of all cores red

Quad 2: basic colour of all cores green

Quad 3: basic colour of all cores grey

Quad 4: basic colour of all cores yellow

Quad 5: basic colour of all cores white

The marker of units are identified with a red helix, the others with white or uncoloured.

The quads of sub units are counted according to the sequence of basic colours.

The units are counted continuously through all layers beginning in the inner layer.

2) VDE 0815

Colour Code for the following Installation Cable Types:

J-Y(St)Y . . . Lg

(Pairs in layers)

2-paired installation cables are stranded to a star quad

circuit 1 a-core red, b-core black

circuit 2 a-core white, b-core yellow

4- and multi-paired installation cables

a-core of 1st pair in each layer is red, all other pairs are white.

b-core blue, yellow, green, brown, black in continual repetition.

Counting: from outside to inside.

3) VDE 0815

Colour Code for the following Installation Cable Types:

JE-Y(St)Y . . . Bd, JE-LiYCY . . . Bd, JE-H(St) . . . and JE-HCH . . . Bd

(Industrial Electronic Cables)

Pair-colour-identification

The insulating cores are identified with different basic colours which are repeated in the same sequence in each unit.

Basic colours of pairs

Pair	1	2	3	4
a-core	BLUE	GREY	GREEN	WHITE
b-core	RED	YELLOW	BROWN	BLACK

2-paired cables: the cores are stranded to a star quad:

circuit 1: a-core blue

circuit 2: a-core grey

b-core red

b-core yellow

Each unit is assigned to one group of ring. All cores in each unit are marked with coloured rings and ring-groups.

Counting direction in all units is from inside to outside.

Ring-colour and Ring-group

Unit-identification

Cables with more than 12 units contain coloured plastic helix in addition to ring code.

Unit-No	Ring-Colour	Ring-Group	Colour identification tape	Unit-No	Ring-Colour	Ring-Group	Colour identification tape
1	PINK	I		11	VIOLET	III	
2	PINK	II		12	VIOLET	IIII	
3	PINK	III		13	PINK	I	BLUE
4	PINK	IIII		14	PINK	II	BLUE
5	ORANGE	I		15	PINK	III	BLUE
6	ORANGE	II		16	PINK	IIII	BLUE
7	ORANGE	III		17	ORANGE	I	RED
8	ORANGE	IIII		18	ORANGE	II	RED
9	VIOLET	I		19	ORANGE	III	RED
10	VIOLET	II		20	ORANGE	IIII	RED

DIN VDE 0816 for Outdoor Telephone Cables

Colour Code for the following Outdoor Telephone Cable Types:

A-2Y(L)2Y...Bd and A-2YF(L)2Y...Bd

A-02Y(L)2Y...Bd, A-02YSF(L)2Y..Bd and A-02YF(L)2Y...Bd

The insulating coverings of single conductors of a quad are to be marked with black rings:

The insulating cores of five star quads of a sub-unit must have the following colours:

Quad No	Colour of Conductor			
	1	2	3	4
1	RED	RED	RED	RED
2	GREEN	GREEN	GREEN	GREEN
3	GREY	GREY	GREY	GREY
4	YELLOW	YELLOW	YELLOW	YELLOW

5	WHITE	WHITE	WHITE	WHITE
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The first sub- or main-unit in each layer is to be marked by an open helix of plastic tape of red (marker). All other sub- or main-units must be whipped with an open helix of white or uncoloured plastic tape.

The quads of a sub-unit are to be counted according to the sequence of basic colours. In cables with more than 5 star quads, the sub- and main-units must be counted continuously beginning with maker-unit at inner layer towards outside.

Design of a sub-unit:

Consist of 5 star quads = 10 pairs (DA)(DA = double core or pair)

Design of a main-unit:

Consist of 5 sub-units = 50 pairs (DA)

Design of a main-unit:

Consist of 10 sub-units = 100 pairs(DA)

Design of a 300-pairs cable:

Consist of 6 main-units, each of 50 pairs (DA)

Design of a 1500 pairs cable:

Consist of 15 main-units, each of 100 pairs (DA)

1. F) Colour Code & Cable Make Up According to IEC 60708-1

Colour Scheme for Pairs

Pair No	Colour of insulation		Pair No	Colour of insulation	
	Cond.A	Cond.B		Cond.A	Cond.B
1	WHITE	BLUE	6	RED	BLUE
2	WHITE	ORANGE	7	RED	ORANGE
3	WHITE	GREEN	8	RED	GREEN
4	WHITE	BROWN	9	RED	BROWN
5	WHITE	GREY	10	RED	GREY

Sub-unit of base (10 pairs)

Identification of basic sub-units, construction of 50 and 100 pair units, and cable cores of up to 100 pairs

20 pairs 30 pairs 50 pairs 70 pairs 100 pairs

Identification of basic units and cable core constructions for cables of more than 100 pairs - Numbered units

150 pairs (3 x 50p) 200 pairs (4 x 50p) 300 pairs (6 x 50p) 400 pairs (8 x 50p)

500 pairs (5 x 100p) 600 pairs (6 x 100p) 800 pairs (8 x 100p) 900 pairs (9 x 100p) 1000 pairs (10 x 100p)

1200 pairs (12 x 100p) 1500 pairs (15 x 100p) 1800 pairs (18 x 100p)

2100 pairs (21 x 100p) 2400 pairs (24 x 100p) 2700 pairs (27 x 100p) 3000 pairs (30 x 100p)

1. G) Colour Code & Cable Make Up According to GR-421, ICEA S-85-625 & ICEA S-84-608

Pair Identification Colours

For pairs numbering 1 through 25, the pair identification colours are outlined below. In cable constructions containing more than 25 pairs, the colours are repeated as necessary. Colour coded binders are used to identify 25 pair groups of colour coded pairs.

Pair Number	Tip Colour	Ring Colour	Pair Number	Tip Colour	Ring Colour
1	WHITE	BLUE	13	BLACK	GREEN
2	WHITE	ORANGE	14	BLACK	BROWN
3	WHITE	GREEN	15	BLACK	GREY
4	WHITE	BROWN	16	YELLOW	BLUE
5	WHITE	GREY	17	YELLOW	ORANGE
6	RED	BLUE	18	YELLOW	GREEN
7	RED	ORANGE	19	YELLOW	BROWN
8	RED	GREEN	20	YELLOW	GREY
9	RED	BROWN	21	VIOLET	BLUE
10	RED	GREY	22	VIOLET	ORANGE
11	BLACK	BLUE	23	VIOLET	GREEN
12	BLACK	ORANGE	24	VIOLET	BROWN
			25	VIOLET	GREY

Identification of Groups of Pairs

For cables through 600 pairs, 25 pair groups are identified by their binder colours in the same sequence as the pair identification is accomplished. Group 1 has White-Blue binders. Group 2 has White-Orange binders, etc. In this manner, each pair is uniquely identified. In cables having 25 pairs or less, binders are normally not used. However, if specified, the binders will be Group 1, White-Blue. For cables of 100 pairs or less, the use of the White binder is optional.

Group Number	Group Pair Counts	Colour of Binders		Group Number	Group Pair Counts	Colour of Binders	
1	1-25	WHITE	BLUE	13	301-325	BLACK	GREEN
2	26-50	WHITE	ORANGE	14	326-350	BLACK	BROWN
3	51-75	WHITE	GREEN	15	351-375	BLACK	GREY
4	76-100	WHITE	BROWN	16	376-400	YELLOW	BLUE
5	101-125	WHITE	GREY	17	401-425	YELLOW	ORANGE
6	126-150	RED	BLUE	18	426-450	YELLOW	GREEN
7	151-175	RED	ORANGE	19	451-475	YELLOW	BROWN
8	176-200	RED	GREEN	20	476-500	YELLOW	GREY
9	201-225	RED	BROWN	21	501-525	VIOLET	BLUE
10	226-250	RED	GREY	22	526-550	VIOLET	ORANGE
11	251-275	BLACK	BLUE	23	551-575	VIOLET	GREEN
12	276-300	BLACK	ORANGE	24	576-600	VIOLET	BROWN

Super-units Binder Identification Colours

It is desirable for manufacturing purposes to combine four 25 pair groups into “super units” when cables have 900 pairs or more.

Pair Number	Group Number	Binder Colour
1-600	1-24	WHITE

601-1200	25-48	RED
1201-1800	49-72	BLACK
1801-2400	73-96	YELLOW
2401-3000	97-120	VIOLET
3001-3600	121-144	BLUE
3601-4200	145-168	ORANGE

Standard Telephone Cable

Various arrangements of pairs, units, groups, and super units are possible for standard non-screened telephone cables both filled and aircore.

The following constructions illustrate the lay-ups normally provided. Cables containing 1200 pairs or more are also available with mirror image core constructions as shown.

Unit Assemblies (Units or U) Group Assemblies (Group or G)

Super Units Assemblies (Super Units or SU)

Colour Codes & Cable Make Up

Mirror Image Core Lay-ups

Mirror image telephone cable core constructions are available in 1200 pair or more cable designs, all of which use 100 pair super units.

1. H) Colour Code According to BT CW 110J

Pair No.	a-wire	b-wire		Pair No.	a-wire	b-wire		Pair No.	a-wire	b-wire	
1	WHITE	BLUE		35	YELLOW	WHITE	Green	69	VIOLET	BROWN	Blue
2	WHITE	ORANGE		36	YELLOW	Green	Brown	70	VIOLET	GREY	Blue
3	WHITE	GREEN		37	YELLOW	GREY	Green	71	VIOLET	WHITE	Orange
4	WHITE	BROWN		38	YELLOW	WHITE	Brown	72	VIOLET	ORANGE	Green
5	WHITE	GREY		39	YELLOW	GREY	Brown	73	VIOLET	ORANGE	Brown
6	WHITE	WHITE	Blue	40	YELLOW	WHITE	Grey	74	VIOLET	GREY	Orange
7	WHITE	ORANGE	Blue	41	BLACK	BLUE		75	VIOLET	WHITE	Green
8	WHITE	GREEN	Blue	42	BLACK	ORANGE		76	VIOLET	GREEN	Brown

9	WHITE	BROWN	Blue	43	BLACK	GREEN		77	VIOLET	GREY	Green
10	WHITE	GREY	Blue	44	BLACK	BROWN		78	VIOLET	WHITE	Brown
11	WHITE	WHITE	Orange	45	BLACK	GREY		79	VIOLET	GREY	Brown
12	WHITE	ORANGE	Green	46	BLACK	WHITE	Blue	80	VIOLET	WHITE	GREY
13	WHITE	ORANGE	Brown	47	BLACK	ORANGE	Blue	81	RED	BLUE	
14	WHITE	GREY	Orange	48	BLACK	GREEN	Blue	82	RED	ORANGE	
15	WHITE	WHITE	Green	49	BLACK	BROWN	Blue	83	RED	GREEN	
16	WHITE	GREEN	Brown	50	BLACK	GREY	Blue	84	RED	BROWN	
17	WHITE	GREY	Green	51	BLACK	WHITE	Orange	85	RED	GREY	
18	WHITE	WHITE	Brown	52	BLACK	ORANGE	Green	86	RED	WHITE	Blue
19	WHITE	GREY	Brown	53	BLACK	ORANGE	Brown	87	RED	ORANGE	Blue
20	WHITE	WHITE	Grey	54	BLACK	GREY	Orange	88	RED	GREEN	Blue
21	YELLOW	BLUE		55	BLACK	WHITE	Green	89	RED	BROWN	Blue
22	YELLOW	ORANGE		56	BLACK	GREEN	Brown	90	RED	GREY	Blue
23	YELLOW	GREEN		57	BLACK	GREY	Green	91	RED	WHITE	Orange
24	YELLOW	BROWN		58	BLACK	WHITE	Brown	92	RED	ORANGE	Green
25	YELLOW	GREY		59	BLACK	GREY	Brown	93	RED	ORANGE	Brown
26	YELLOW	WHITE	Blue	60	BLACK	WHITE	Grey	94	RED	GREY	Orange
27	YELLOW	ORANGE	Blue	61	VIOLET	BLUE		95	RED	WHITE	Green
28	YELLOW	GREEN	Blue	62	VIOLET	ORANGE		96	RED	GREEN	Brown
29	YELLOW	BROWN	Blue	63	VIOLET	GREEN		97	RED	GREY	Green
30	YELLOW	GREY	Blue	64	VIOLET	BROWN		98	RED	WHITE	Brown

31	YELLOW W	WHITE	Orange	65	VIOLET	GREY		99	RED	GREY	Brown
32	YELLOW W	ORANGE	Green	66	VIOLET	WHITE	Blue	100	RED	WHITE	Grey
33	YELLOW W	ORANGE	Brown	67	VIOLET	ORANGE	Blue	101	WH	Red	BLUE
34	YELLOW W	GREY	Orange	68	VIOLET	GREEN	Blue	102	WH	Red	ORANGE