3M™ Round, Shielded/Jacketed, Disc. Wire Cable

28 AWG Stranded, Twisted Pair, PVC/PVC 3600X Series



- Meets external wiring requirements of National Electrical Code, Article 725 (CL2)
- 28 AWG stranded wire provides flexibility
- Twisted pairs reduce crosstalk for balanced drive applications
- Dual shielding with aluminum film foil and copper braid provides excellent EMI/ESD protection
- Wires are color coded for easy identification
- 35 db average shielding effectiveness
- See Regulatory Information Appendix (RIA) for chemical compliance information (RIA E1 & C1 apply)

Date Modified: May 11, 2009

Physical

Jacket Material: Polyvinyl Chloride (PVC); **Color:** Beige

Primary Material: PVC

Marking:

Standard: (UL) CL2 75C 28 AWG 3M XX
C AWM IIA/B 80C 150V FT1 EU <50V
(where XX may be NU, MR or NW)

Conductors: 28 AWG, 7 × 36 AWG [7 × Ø 0.127] Tinned Stranded Copper

Shielding: 0.001 [0.03] Thick Aluminum/Polyester Film Foil and 90% Coverage Tinned Copper Braid

Electrical

Voltage Rating:	USA: N.E.C. 725, CL2	Canada: 150V EU: <50V
Insulation Resistance:	(Primary Cable) > 1×10^{10} Ω/10 ft. [3 m]	
Characteristic Impedance:	**Unbalanced** 58 Ω	**Balanced** 91 Ω
Capacitance:	29.2 pF/ft [95.8 pF/m]	18.5 pF/ft [60.7 pF/m]
Inductance:	0.10 µH/ft [0.33 µH/m]	0.15 µH/ft [0.49 µH/m]
Propagation Delay:	1.69 ns/ft [5.54 ns/m]	1.69 ns/ft [5.54 ns/m]
Velocity of Propagation:	60%	60%

Note: Unbalanced is measured between conductors within a pair with one conductor connected to the shield. Balanced is measured between conductors within a pair with the shield floating.

Environmental

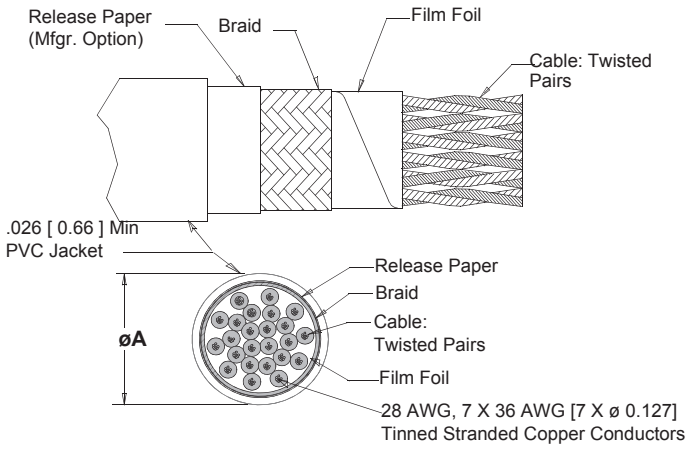
Temperature Rating:	USA: CL2; 75°C Max	Canada: +80°C
Flammability Rating:	USA: N.E.C. 725, CL2	Canada: FT1

UL File No.: E118773, Power Limited Circuit Cable; CL2

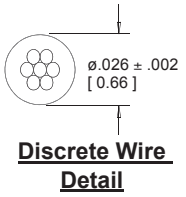
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3M™ Round, Shielded/Jacketed, Disc. Wire Cable

28 AWG Stranded, Twisted Pair, PVC/PVC — 3600X Series



Number of Conductors	3M Part Number	Dimension A
14 (7 pair)	3600X/14	.22 [5.6]
20 (10 pair)	3600X/20	.24 [6.1]
24 (12 pair)	3600X/24	.25 [6.4]
26 (13 pair)	3600X/26	.25 [6.4]
36 (18 pair)	3600X/36	.29 [7.4]
40 (20 pair)	3600X/40	.30 [7.6]
50 (25 pair)	3600X/50	.32 [8.1]
68 (34 pair)	3600X/68	.36 [9.1]
80 (40 pair)	3600X/80	.39 [9.9]
100 (50 pair)	3600X/100	.44 [11.2]



Discrete Wire Detail

Inch
[mm]

Tolerance Unless Noted			
	.0	.00	.000
Inch	±.1	±.05	±.010

[ ] Dimensions for Reference Only

Pair Identification												
Pair	Cond	1st Conductor		Cond	2nd Conductor		Pair	Cond	1st Conductor		Cond	2nd Conductor	
		Solid	Band		Solid	Band			Solid	Band		Solid	Band
1	1	Black	Red	2	Red	Black	26	51	Brown	Yellow	52	Yellow	Brown
2	3	Black	White	4	White	Black	27	53	Brown	Orange	54	Orange	Brown
3	5	Black	Green	6	Green	Black	28	55	Orange	Yellow	56	Yellow	Orange
4	7	Black	Blue	8	Blue	Black	29	57	Violet	Orange	58	Orange	Violet
5	9	Black	Yellow	10	Yellow	Black	30	59	Violet	Red	60	Red	Violet
6	11	Black	Brown	12	Brown	Black	31	61	Violet	White	62	White	Violet
7	13	Black	Orange	14	Orange	Black	32	63	Violet	Green	64	Green	Violet
8	15	Red	White	16	White	Red	33	65	Violet	Blue	66	Blue	Violet
9	17	Red	Green	18	Green	Red	34	67	Violet	Yellow	68	Yellow	Violet
10	19	Red	Blue	20	Blue	Red	35	69	Violet	Brown	70	Brown	Violet
11	21	Red	Yellow	22	Yellow	Red	36	71	Violet	Black	72	Black	Violet
12	23	Red	Brown	24	Brown	Red	37	73	Gray	White	74	White	Gray
13	25	Red	Orange	26	Orange	Red	38	75	Gray	Brown	76	Brown	Gray
14	27	Green	White	28	White	Green	39	77	Gray	Red	78	Red	Gray
15	29	Green	Blue	30	Blue	Green	40	79	Gray	Orange	80	Orange	Gray
16	31	Green	Yellow	32	Yellow	Green	41	81	Gray	Yellow	82	Yellow	Gray
17	33	Green	Brown	34	Brown	Green	42	83	Gray	Green	84	Green	Gray
18	35	Green	Orange	36	Orange	Green	43	85	Gray	Blue	86	Blue	Gray
19	37	White	Blue	38	Blue	White	44	87	Tan	Orange	88	Orange	Tan
20	39	White	Yellow	40	Yellow	White	45	89	Tan	Green	90	Green	Tan
21	41	White	Brown	42	Brown	White	46	91	Tan	Black	92	Black	Tan
22	43	White	Orange	44	Orange	White	47	93	Tan	Blue	94	Blue	Tan
23	45	Blue	Yellow	46	Yellow	Blue	48	95	Tan	White	96	White	Tan
24	47	Blue	Brown	48	Brown	Blue	49	97	Tan	Yellow	98	Yellow	Tan
25	49	Blue	Orange	50	Orange	Blue	50	99	Tan	Brown	100	Brown	Tan

Ordering Information

3600X / XX XX

Jacket Color Options:
A = Black Jacket (Special)
B = Beige Jacket (Standard)
G = Gray Jacket (Special)

Number of Conductors (See Table)

Blank = Standard
SF = Splice Free

Note: Available in standard 100 ft, 200 ft and 300 ft rolls, please specify when ordering. Contact 3M for availability of additional conductor counts and/or custom roll lengths.

3M
Interconnect Solutions
http://www.3M.com/interconnects/

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For technical, sales or ordering information call
800-225-5373

Regulatory Information Appendix

3M Electronic Solutions Division/Interconnect

EUROPE

Appendix E1: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product is RoHS Compliant 2005/95/EC.

"RoHS Compliant 2005/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty stated below.

Appendix E2: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product contains lead in the compliant pin area in excess of the maximum concentration value allowed but is compliant by exemption under EU Commission Decision 2005/747/EC.

"RoHS Compliant 2005/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty stated below.

Appendix E3: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment as amended by Commission Decision 2005/618/EC.

This product contains lead in the solder tail area in excess of the maximum concentration value allowed.

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In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty stated below.

Appendix E4: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC, as amended by EU Commission Decision 2005/717/EC, as amended by EU Court of Justice Decision 2008/C 116/04

This product contains decaBDE in the insulating material in excess of the maximum concentration allowed for finished products subject to EU RoHS that are placed on the EU market after June 30, 2008.

Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty stated below.

Appendix E5: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

This product contains lead in excess of the maximum concentration value allowed but is compliant by exemption under Item 6 of the Annex to the Directive.

"RoHS Compliant 2005/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

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CHINA

Appendix C1: China RoHS

Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.
This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does not** contain any of the following substances in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty stated below.

Appendix C2: China RoHS

Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.
This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

The numerical reference in the symbol above should not be construed as a representation regarding the product's life or an extension of a product warranty. The product warranty is stated below. In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the product Warranty stated below.

产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
端子镀层(contact plating)	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)

Appendix C3: China RoHS

Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers (excluding decaBDE); or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

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产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
合金(Metal alloy)	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)

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3M Electronics Solutions Division
6801 River Place Blvd.
Austin, TX 78726-9000
U.S.A.
1-800-225-5373
www.3m.com/interconnects

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Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А