

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

28 AWG Stranded, Twisted Pair, Halogen Free PO/PO

HF644 Series



- Low Smoke Zero Halogen (LSZH). Advantages of LSZH insulation are the low smoke (IEC 61034-2:2005), and low toxicity of combustion gases (NF X 70-100-2:2006), reducing the risk to firefighters, and reducing soot and corrosion damage to nearby equipment.
- Broad operating temperature range from -40°C to 105°C
- Stranded wire provides flexible routing
- Twisted pair construction helps reduce crosstalk for balanced drive applications
- Dual shielding with aluminum film foil and copper braid provides EMI/ESD protection
- Wires are color coded for easy identification
- See the Regulatory Information Appendix (RIA) in the “RoHS compliance” section of [www.3Mconnector.com](http://www.3Mconnector.com) for compliance information (RIA E1 & C1 apply)

Date Modified: December 9, 2010

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## Physical

Jacket Material: Halogen Free Polyolefin (PO)

Color: Dark Gray

Primary Material: Halogen Free Polyolefin (PO)

Color: See "Pair Identification" table

**Marking Standard:** None

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

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

## Electrical

**Voltage Rating:** USA: 300V    Canada 150V    EU: <50V

**Insulation Resistance:** (Primary Cable) > 1 × 10<sup>10</sup> Ω/10 ft. [ 3.05 m ]

<b>Characteristic Impedance:</b>	<b>Unbalanced</b>	<b>Balanced</b>
	58 Ω	95 Ω

<b>Capacitance:</b>	27.7 pF/ft [ 90.9 pF/m ]	17.0 pF/ft [ 55.8 pF/m ]
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<b>Inductance:</b>	0.09 µH/ft [ 0.30 µH/m ]	0.15 µH/ft [ 0.49 µH/m ]
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<b>Propagation Delay:</b>	1.62 ns/ft [ 5.31 ns/m ]	1.61 ns/ft [ 5.28 ns/m ]
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<b>Velocity of Propagation:</b>	63%	63%
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Note: Unbalanced is measured between ground-signal-ground conductors, with shield grounded. Balanced is measured between signal conductors within a pair, with the shield floating

## Environmental

**Temperature Rating:** -40°C to +105°C

**Flammability Rating:** VW-1

Halogen Free is defined as both 1) no halogen compounds that are intentionally added to the product or used in the manufacturing process for the product and 2) any impurities present are less than 900 ppm bromine, less than 900 ppm chlorine and/or less than 1500 ppm total bromine and chlorine. The latter are the levels set forth in certain industry standards for printed circuit boards, such as the International Electrotechnical Commission (IEC) 61249-2-21 standard. This information represents 3M's knowledge and belief which may be based in whole or in part on information provided by 3rd party suppliers to 3M.



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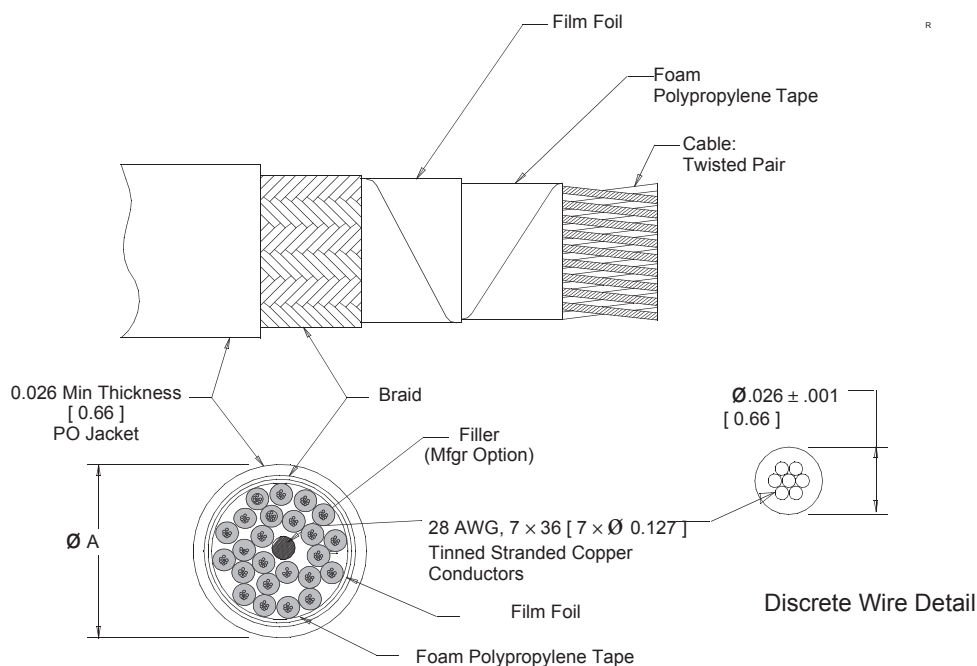
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HF644 Series

Number of Conductors	3M Part Number	Dimension A ± .02
14 (7 pair)	HF644/14	.22 [ 5.6 ]
16 (8 pair)	HF644/16	.23 [ 5.8 ]
20 (10 pair)	HF644/20	.24 [ 6.1 ]
24 (12 pair)	HF644/24	.25 [ 6.4 ]
26 (13 pair)	HF644/26	.25 [ 6.4 ]
30 (15 pair)	HF644/30	.27 [ 6.9 ]
36 (18 pair)	HF644/36	.29 [ 7.4 ]
40 (20 pair)	HF644/40	.30 [ 7.6 ]
50 (25 pair)	HF644/50	.32 [ 8.1 ]
68 (34 pair)	HF644/68	.37 [ 9.4 ]
80 (40 pair)	HF644/80	.39 [ 9.9 ]
100 (50 pair)	HF644/100	.44 [ 11.2 ]



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

[ ] Dimensions for Reference Only

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

## Ordering Information

**HF644/XX XX**

Number of Conductors  
(See Table)

Blank = Standard  
SF = Splice Free

Note: Available in standard 100-ft rolls. 14 to 68 conductors available in 300-ft rolls. 80 to 100 conductors available in 200-ft rolls. Contact 3M for availability of additional conductor counts and/or custom roll lengths.

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