MaxFlite high-performance 100 Base-T Ethernet cables

MaxFlite data cables are high-performance, high-speed 100 Base-T Ethernet cables designed for use in aircraft IFE (In-Flight Entertainment) systems. They are also ideal for other applications using IEEE 1394, ARINC 629, and similar protocols.

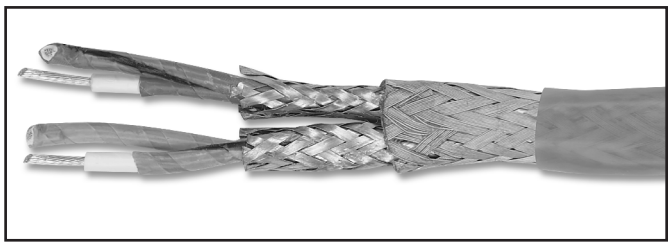
These cables feature our advanced LTE extruded expanded PTFE dielectric for increased velocity of propagation, and are available as quad, or twisted-pair (single or double) constructions.

They can also be used as components in more complex cables with additional components such as power wires, coaxial cables, or other types.

MaxFlite cables meet the flammability requirements of FAR 25.853, and the smoke and toxicity requirements of Boeing and Airbus ABD0031.

Performance:

Temperature rating: 150˚ C. Higher temperature ratings (up to 260˚ C) available with plating other than tin on shield wires.



Construction Details

Jacket: Transparent blue FEP.

Outer shield: Round tin-plated copper braid, 85% minimum coverage.

Inner shield: Flat tin-plated copper braid, 92% minimum coverage.

Component wire insulation: LTE extruded expanded PTFE with sintered PTFE tape jacket.

Component wire conductor: Stranded SPC or SPCA.

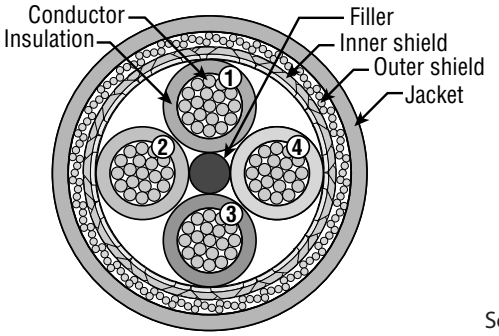
Identification: Marker tape under jacket.

Options: Other insulation or shield materials and/or plating available on request.

MaxFlite 100 Base-T Ethernet cable—Quad

Insulation Color:

Wire 1: Red;
Wire 2: Green;
Wire 3: Blue;
Wire 4: Yellow.



Some proportions altered to illustrate detail.

Dimensions and Weights

Thermax P/N	Inner Conductor				Insulation Diameter	Inner Shield Diameter	Outer Shield Diameter	Jacket Diameter	Min. Bend Radius	Weight
	AWG	Strands	Diameter	Material						
MX100Q-22	22	19	.0295 (.75)	SPC	.058 (1.47)	.145 (3.68)	.165 (4.19)	.190 (4.83)	2.0 (51)	35.5 (52.9)
MX100Q-24	24	19	.0235 (.60)	SPCA	.046 (1.17)	.117 (2.97)	.139 (3.53)	.160 (4.06)	1.5 (38)	24.0 (35.8)
MX100Q-26	26	19	.0189 (.48)	SPCA	.038 (.97)	.100 (2.54)	.118 (3.00)	.138 (3.50)	1.25 (32)	19.0 (27.6)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). All values are nominal unless otherwise indicated.
SPCA: Silver-plated high-strength copper alloy. **SPC:** Silver-plated copper.

Electrical Performance

Thermax P/N	Differential Impedance	Velocity of Propagation	Capacitance (pF/ft)	Attenuation (dB/100 ft.)		Near End Crosstalk @100 MHz	Time Delay (Ns/ft.)	Cat. 5e Attenuation Budget (ft.)
				10 MHz	100 MHz			
MX100Q-22	100Ω ±10%	79%	13.0	1.7	6.0	<-32 dB	1.29	350
MX100Q-24	100Ω ±10%	79%	13.0	2.4	8.0	<-32 dB	1.29	270
MX100Q-26	100Ω ±10%	79%	13.0	3.0	10.5	<-32 dB	1.29	200

All values are nominal unless otherwise indicated.

See next page for single and double twisted-pair construction.

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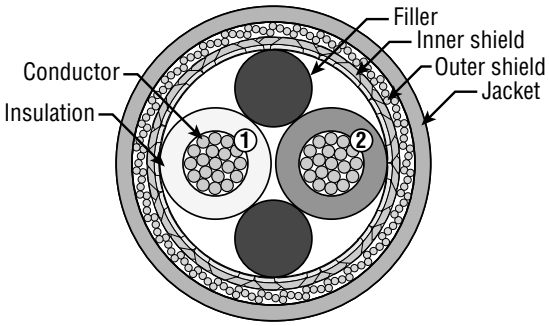
Asia: (818) 701-0565 • Other International: (203) 284-9610

MaxFlite 100 Base-T Ethernet cable—Twisted-Pair (Single)

Insulation Color:
Wire 1: White;
Wire 2: Blue.



Some proportions altered to illustrate detail.

Dimensions and Weights

Thermax P/N	Inner Conductor				Insulation Diameter	Inner Shield Diameter	Outer Shield Diameter	Jacket Diameter	Min. Bend Radius	Weight
	AWG	Strands	Diameter	Material						
MX100-22	22	19	.0295 (.75)	SPC	.068 (1.73)	.140 (3.56)	.160 (4.06)	.180 (4.57)	2.0 (51)	26.0 (38.7)
MX100-24	24	19	.0235 (.60)	SPCA	.054 (1.37)	.110 (2.79)	.125 (3.18)	.145 (3.68)	1.5 (38)	20.0 (29.8)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). All values are nominal unless otherwise indicated.
SPCA: Silver-plated high-strength copper alloy. **SPC:** Silver-plated copper.

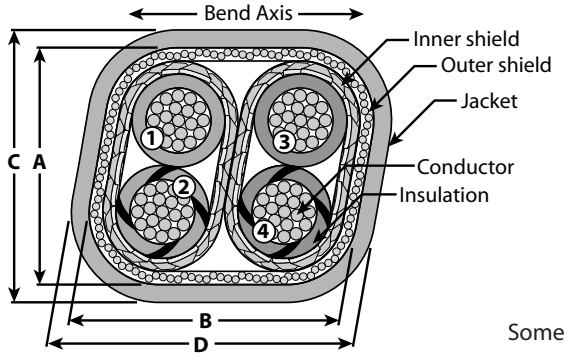
Electrical Performance

Thermax P/N	Differential Impedance	Velocity of Propagation	Capacitance (pF/ft)	Attenuation (dB/100 ft.)		Near End Crosstalk @100 MHz	Time Delay (Ns/ft.)	Cat. 5e Attenuation Budget (ft.)
				10 MHz	100 MHz			
MX100-22	100Ω ±10%	79%	13.0	1.6	5.5	N/A	1.29	380
MX100-24	100Ω ±10%	79%	13.0	2.1	7.1	N/A	1.29	285

All values are nominal unless otherwise indicated.

MaxFlite 100 Base-T Ethernet cable—Twisted-Pair (Double)

Insulation Color:
Wire 1: Red;
Wire 2: Red / black stripe;
Wire 3: Blue;
Wire 4: Blue / black stripe.



Some proportions altered to illustrate detail.

Dimensions and Weights

Thermax P/N	Inner Conductor				Insulation Diameter	Outer Shield		Jacket		Min. Bend Radius*	Weight
	AWG	Strands	Diameter	Material		A	B	C	D		
MX100P-22	22	19	.0295 (.75)	SPC	.071 (1.80)	.163 (4.14)	.276 (7.01)	.195 (4.95)	.300 (7.62)	2.0 (51)	42.0 (62.6)
MX100P-24	24	19	.0235 (.60)	SPC	.063 (1.60)	.150 (3.81)	.250 (6.35)	.175 (4.45)	.275 (6.99)	1.75 (44)	36.0 (53.6)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). All values are nominal unless otherwise indicated.
SPCA: Silver-plated high-strength copper alloy. **SPC:** Silver-plated copper. ***Cable may be bent in one axis only, as indicated in drawing.**

Electrical Performance

Thermax P/N	Differential Impedance	Velocity of Propagation	Capacitance (pF/ft)	Attenuation (dB/100 ft.)		Near End Crosstalk @100 MHz	Time Delay (Ns/ft.)	Cat. 5e Attenuation Budget (ft.)
				10 MHz	100 MHz			
MX100P-22	100Ω ±10%	79%	13.0	2.0	6.5	<-32 dB	1.29	300
MX100P-24	100Ω ±10%	79%	13.0	2.4	7.5	<-32 dB	1.29	280

All values are nominal unless otherwise indicated.

See previous page for quad construction.

Aircraft Entertainment System Cables

As commercial aircraft entertainment systems become increasingly sophisticated, the technology of the cables used in the systems is an important factor in clean signal delivery.

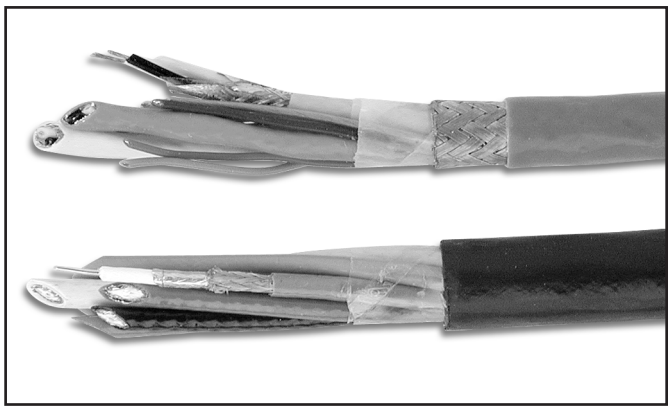
Thermax aircraft entertainment system cables are custom designs that are composed of materials that best suit not only the electrical and electronic characteristics of the specific system, but meet safety and reliability requirements as well.

These cables typically include coaxial and/or high-speed twisted-pair twinaxial data cables (such as the MaxFlite cables shown on pages 4 and 5), along with other component wires for power and signal transmission.

The data-transmission cable components can also be supplied with our unique LTE expanded PTFE dielectric for increased data speed and light weight (see page 3 for details).

The material options listed on this page represent typical choices for in-flight environments.

Please contact your Thermax representative with your specific requirements.



Construction Options

Component wires:

Conductors: Tin-plated stranded copper. Also available in high-strength copper alloy. Nickel or silver plating available for higher temperature rating than tin plating.

Insulation: Extruded FEP. PTFE, composite types, and ETFE available depending on application.

Coaxial cables:

Light weight, low-loss types with LTE expanded extruded PTFE dielectric for velocity of propagation up to 80%; 50 or 75 ohm impedance (see pages 13 for standard types).

Silver-plated copper shield, with extruded FEP jackets; other jacket materials available.

Twisted-pair data cables:

Conductors: 24 AWG (19/36) silver-plated high-strength copper alloy conductors.

Primary Insulation: LTE expanded extruded low-density PTFE, or other insulation types.

Shield: 38 AWG nickel-plated copper.

Jacket: Extruded FEP. PTFE, composite types, and ETFE available depending on application.

These cables can include our MaxFlite (100 Base-T Ethernet) data cables—see page 4 for details.

Cabling:

Component wires and cables are cabled together and jacketed with FEP, ETFE, or high-density polyurethane.

Identification:

As required, including permanent laser marking.

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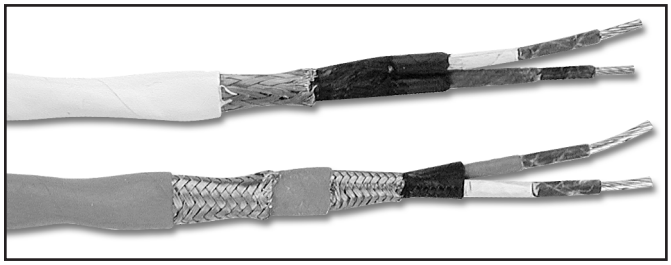
Asia: (818) 701-0565 • Other International: (203) 284-9610



Construction Options

Jacket: Tape wrapped PTFE; extruded jacket or our unique ***Seamless Wrap*** PTFE tape optional.

Shield: Nickel- or silver-plated copper.

Dielectric: Tape wrapped PTFE with semiconductive inner and outer PTFE tape. "SS" part numbers feature our proprietary easy-stripping design.

Center Conductor: Nickel or silver-plated stranded copper.

Options: Wide variety of options for conductor and shield materials and plating and configurations of low-noise layering available.

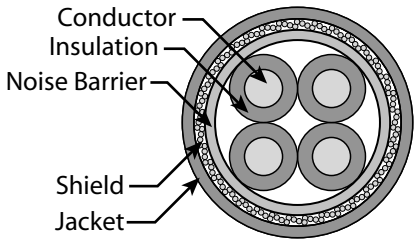
Thermax Low-Noise cables minimize triboelectric noise generated by cable movement, as well as providing superior shielding to protect signals from external interference.

These cables are ideal for use with piezoelectric accelerometers or other sensitive transducers, or other applications with low-power signals and/or electrically noisy environments.

They are also used in airborne EVM (Engine Vibration Monitoring) systems, with approvals from many major aerospace manufacturers.

The cables shown below are just a few examples of our low-noise cable expertise. Many other combinations of materials and construction can be used to produce a low-noise cable that will fulfill your needs; please contact your Thermax representative with your requirements.

Low-Noise Four-Conductor Shielded and Jacketed Cable



Thermax P/N: LN34-MTTF-134(4)STJE
Conductor: Solid SPCA, 34 AWG, .0063 (.16) diameter.
Insulation: Extruded PTFE, .018 (.46) diameter. Colors: Red, black, yellow, white.
Noise Barrier: Low-noise tape over twisted core, .051 (1.30) diameter.
Shield: 40 AWG silver-plated copper braid, 90% coverage, .063 (1.60) diameter.
Jacket: Blue ***Seamless Wrap*** PTFE tape, .076 (1.93) diameter.
Temperature rating: -55 to 200° C. **Voltage rating:** 160V.

Low-Noise Twinaxial Cables—Dimensions, Materials, and Weights

Thermax P/N	Conductor AWG / Diameter Stranding / Material	Insulation Diameter	Inner Shield Diameter AWG / Material	Jacket Diameter Material	Outer Shield Diameter AWG / Material	Outer Jacket Diameter Material	Weight
SS72012	22 .030 (.76) 19/34 NPC	.062 (1.58)	.160 (4.06) 38 NPC	.180 (4.57) PTFE Tape	None	None	26 (36.7)
SS72013	20 .037 (.94) 19/32 NPC	.070 (1.78)	.180 (4.57) 38 NPC	.200 (5.08) PTFE Tape	None	None	31 (46.1)
SS72014	18 .047 (1.20) 19/30 NPC	.080 (2.03)	.200 (5.08) 38 NPC	.220 (5.59) PTFE Tape	None	None	40 (59.5)
SS72016	20 .037 (.94) 19/30 NPC	.070 (1.78)	.180 (4.57) 38 NPC	.200 (5.08) PTFE Tape	.218 (5.54) 38 NPC	.238 (6.05) PTFE Tape	40 (59.5)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). All values are nominal unless otherwise indicated. **NPC:** Nickel-plated copper. **SPC:** Silver-plated copper. **SPCA:** Silver-plated high-strength copper alloy. **SPCW:** Silver-plated copper-covered steel (copperweld).

Sensor Cables

Thermax sensor cables are designed to maintain critical low-level signals from sophisticated sensors, providing a clean data transmission that helps preserve the information from the sensor.

Whether your application calls for the measurement of weight, fluid levels, flow rate, proximity or vibration, we can design and build a cable to meet even your most demanding needs in such applications as:

- Pressure Transducers (Liquid Level, Flow Level, Load Cell);
- Photoelectric Transducers;
- Proximity Transducers;
- Vibration Sensors.

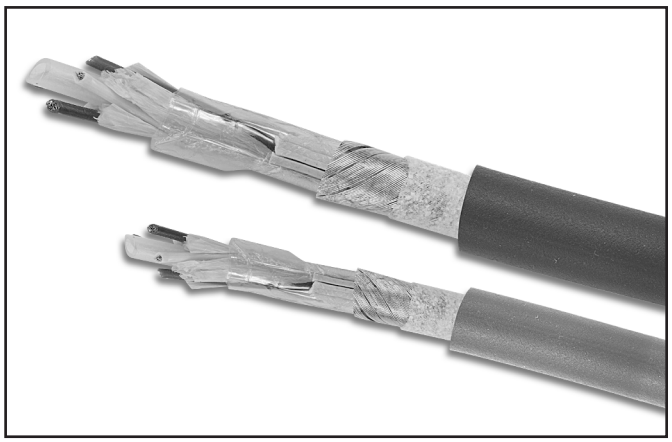
We have extensive experience manufacturing rugged cable constructions suitable for hostile environments such as those present in wastewater treatment facilities, municipal drainage sumps, and well-monitoring applications.

Our cables can be designed with materials suitable for demanding short term, long term, or permanent installations, even those with extreme environments.

Our cables are capable of withstanding temperatures from -55° C to +260° C.

The material options listed on this page represent typical choices for sensor cables.

Please contact your Thermax representative with your specific requirements.



Construction Options

Typical sensor cable materials:

Conductors: Stranded or solid copper or high-strength copper alloy. Silver or nickel plated.

Insulation: FEP; PVC; Nylon; PTFE; polyethylene; polypropylene. An optional secondary insulation of Nylon can be applied over the primary insulation to assure low leakage current, even under environmental extremes of moisture, chemicals and mechanical flexure.

Breather Tubes: Polyethylene; Nylon. (For use in submersible applications where air pressure regulation is required.)

Shields: Aluminum/Mylar foil; copper braid, either flat or round wires (nickel, silver, or tin plated); stainless steel braid for increased mechanical strength. Custom combinations of shield types available for enhanced shielding and EMI resistance.

Jackets: FEP; PFA; PVC; TPR; polyurethane; Surlyn®; Tefzel®. Dupont Tefzel® and Surlyn® materials are commonly used where their increased abrasion resistance and inert chemical profile are desirable for the specific application. Examples are remediation wells and drinking water tanks that are periodically sanitized using chemicals such as sodium hypochlorite without removing the transducer.

Strength Members: Stainless steel or Kevlar® strength members can be incorporated into cables requiring enhanced longitudinal strength.

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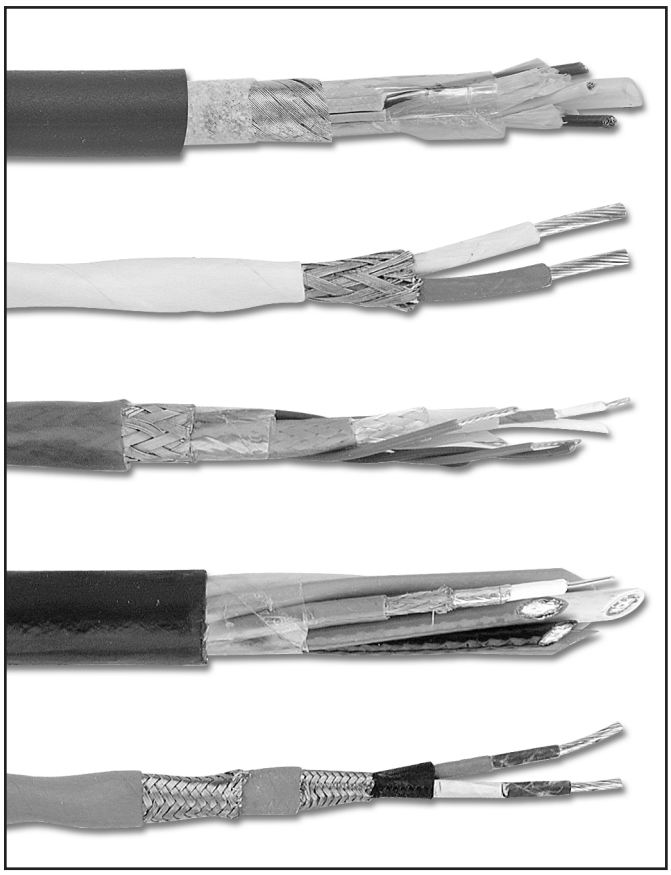
Asia: (818) 701-0565 • Other International: (203) 284-9610



Construction Options

Typical flight test cable materials:

Conductors: Stranded or solid copper; high-strength copper alloy; copper-clad steel. Nickel, silver, tin, or 27% nickel plating.

Insulation: ETFE; FEP; LTE;* PFA; PTFE; composite mica/glass. *LTE is our proprietary expanded extruded PTFE dielectric with enhanced performance such as a dielectric constant of 1.38, and velocity of propagation up to 85% (see page 3 for more details).

Shields: Aluminum/Mylar foil; copper or high-strength copper alloy braid, either flat or round wires. Nickel, silver, or tin plated. Custom combinations of shield types available for enhanced shielding and crosstalk resistance.

Jackets: ETFE; FEP; PFA; PTFE; glass braid. PTFE jackets available with our unique ***Seamless Wrap*** PTFE tape (see page 2 for details). Color: Orange with optional white stripe.

Almost any wire or cable in this catalog can be supplied as a Flight Test cable, with industry-standard orange jacket for identification.

As a leader in aerospace wire and cable, we can apply our technical and manufacturing expertise to your most demanding applications especially in severe environments and high temperatures.

Our low-noise designs are especially suited to flight test applications. Besides providing excellent shielding, the design of these cables minimizes triboelectric noise produced by cable movement.

Our expertise in sensor cable design helps ensure that sensor data is transmitted cleanly to monitoring or recording equipment.

Flight test cables can be supplied with our unique LTE expanded PTFE dielectric for increased signal speed and light weight (see page 3 for details).

We have a full range of thermocouple cables designed to the new SAE AS5419 specification.

The material options listed on this page represent typical choices for high-performance flight test cables.

Please contact your Thermax representative with your specific requirements.

SAE AS5419 Thermocouple Cables

The new SAE AS5419 standard replaces the cancelled MIL-W-5846 specification. This standard defines thermocouple cables with a wide variety of insulation, shielding, and jacket materials.

This standard includes cables with parallel or spiral laid component wires. If shielded and/or jacketed, they can have single or double shields and jackets.

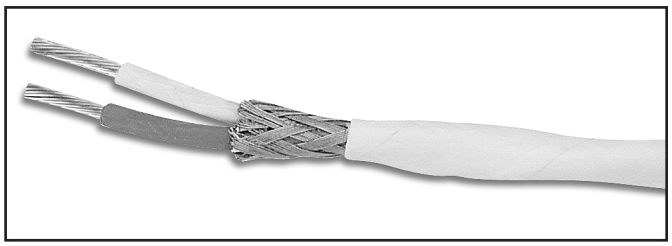
Part numbers are generated from the desired component materials and cable construction.

Versions with PTFE tape jackets are available with our unique ***Seamless Wrap*** PTFE tape (see page 2 for details).

Performance:

Voltage rating: Dependent on component wire.

Temperature ratings:
Dependent on lowest-rated component material.



Construction Details

Component wire conductor:
Positive: Stranded 90% nickel, 10% chromium.
Negative: Stranded 95% nickel, 5% aluminum.

Component wire insulation:
As used on MIL-DTL-22759, 25038, or 81822 wires (see part numbering chart).

Shield: Flat or round wires of copper, high-strength copper alloy, 27% nickel-coated copper, or stainless steel; with nickel, silver, or tin plating (see part numbering chart).

Jacket: Wide variety of materials, tape or extruded (see part numbering chart).

Component wire color: Positive wire: White.
Negative wire: Green.

Jacket color: White or natural material color (see part numbering chart).

SAE AS5419 Part Numbering

AS5419 A 22 JF KXS N 06

- A — Cable configuration and shield coverage (Table 1)
- 22 — Component wire AWG (14 through 22 only)
- JF — Component wire insulation type (Table 2)
- KXS — EMF Designator*
- N — Shield type (Table 3)
- 06 — Jacket type (Table 4)

*EMF shall conform to ANSI/MC96.1; type KPS and KNS are used for standard EMF limits, type KPH and KNH for special limits.

Table 1—SAE AS5419 Cable Configuration and Shield coverage

These letters specify both wire lay and shield coverage.

85% shield coverage	90% shield coverage
A: Spiral-laid cable configuration	**C:** Spiral-laid cable configuration
B: Duplex parallel cable configuration	**D:** Duplex parallel cable configuration

Table 2—SAE AS5419 Component Wire Insulation Codes

Component wires have conductors as noted above, with insulation matching that of the wires shown below.

Insulation Type	Code	Insulation Type	Code	Insulation Type	Code	Insulation Type	Code	Insulation Type	Code
M22759/5	VA	M22759/18	TG	M22759/80	WB	M22759/91	WP	M81381/13	NA
M22759/6	WA	M22759/19	TH	M22759/81	WC	M22759/92	WR	M81381/14	NB
M22759/7	SA	M22759/20	TK	M22759/82	WE	M25038/1	JA	M81381/17	NE
M22759/8	TA	M22759/21	TL	M22759/84	WG	M25038/3	JF	M81381/18	NF
M22759/9	LE	M22759/22	TM	M22759/85	WH	M81381/7	MR	M81381/19	NG
M22759/10	LH	M22759/23	TN	M22759/86	WJ	M81381/8	MS	M81381/20	NH
M22759/11	RC	M22759/28	JB	M22759/87	WK	M81381/9	MT	M81381/21	NK
M22759/12	RE	M22759/29	JC	M22759/88	WL	M81381/10	MV	M81381/22	NL
M22759/16	TE	M22759/30	JD	M22759/89	WM	M81381/11	MW		
M22759/17	TF	M22759/31	JE	M22759/90	WN	M81381/12	MY		

See following page for shield and jacket material tables.

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Asia: (818) 701-0565 • Other International: (203) 284-9610

SAE AS5419 Part Numbering

AS5419 A 22 JF KXS N 06

- AS5419 — Cable configuration and shield coverage (Table 1)
- A — Component wire AWG (14 through 22 only)
- 22 — Component wire insulation type (Table 2)
- JF — Conductor material and coating (Table 2)
- KXS — EMF Designator*
- N — Shield type (Table 3)
- 06 — Jacket type (Table 4)

*EMF shall conform to ANSI/MC96.1; type KPS and KNS are used for standard EMF limits, type KPH and KNH for special limits.

Table 3—SAE AS5419 Shield Codes

When both double shield and double jacket are specified, the inner jacket is between the two layers of shield.

Shield Material , Wire shape	Temperature limit, ˚C	Single shield	Double shield
No shield	—	U	U
Nickel-plated copper, round	260	N	Y
Silver-plated copper, round	200	S	W
Tin-plated copper, round	150	T	V
Nickel-clad copper (27%), round	400	C	R
Stainless steel, round	400	F	Z
Nickel-plated high-strength copper alloy, round	260	P	L
Silver-plated high-strength copper alloy, round	200	M	K
Nickel-plated copper, flat	260	*	#
Silver-plated copper, flat	200	G	A
Tin-plated copper, flat	150	J	D
Nickel-plated high-strength copper alloy, flat	260	E	X
Silver-plated high-strength copper alloy, flat	200	H	B
Nickel-chromium alloy, flat	400	I	Q

Table 4—SAE AS5419 Jacket Codes

Temperature limits are for information only; other cable components may determine the temperature limit for the finished cable.

Jacket material and color	Temp. limit, ˚C	Single jacket	Double jacket
No jacket	—	00	00
ETFE (Ethylene Tetrafluoroethylene) jackets:			
ETFE, extruded, clear	150	15	65
ETFE, extruded, white	150	14	64
FEP (Fluorinated Ethylene Propylene) jackets:			
FEP, extruded, clear	200	05	55
FEP, extruded, white	200	09	59
PFA (Perfluoroalkoxy) jackets:			
PFA, extruded, clear	260	21	71
PFA, extruded, white			
Polyester jackets:			
Polyester braid impregnated with high-temperature finishers over polyester tape	150	04	54
Polyimide/FEP (Fluorinated Ethylene Proplyene) jackets:			
Natural polyimide / clear FEP tape, wrapped and heat sealed, with FEP outer surface	200	11	61
Natural polyimide / FEP tape, wrapped and heat sealed, with polyimide outer surface	200	12	62
Opaque polyimide / clear FEP tape, wrapped and heat sealed, with polyimide outer surface	200	22	72
PTFE (Polytetrafluoroethylene) jackets:			
PTFE, taped and fused, white*	260	06	56
PTFE tape, white, wrapped over a tape layer of natural polyimide combined with FEP and heat sealed*	260	24	74
PTFE-coated glass braid impregnated with PTFE finisher over presintered PTFE tape, white	260	07	57
Braid of aromatic polyamide with high-temperature finisher over presintered PTFE tape	200	16	66

*These cables can be provided with ***Seamless Wrap*** PTFE tape jackets (see page 2 for details).

Audio Cables

When your high-end speaker or interconnect cable requirements call for the latest high-performance materials, Thermax/CDT should be your first choice. Our experience in commercial aircraft cabin communications and in-flight entertainment systems means we have the knowledge to design audio cables that deliver clean, clear signals.

We can apply our technical and manufacturing expertise to your most demanding applications.

Put our expertise to work for you in the design of audio cables that provide controlled or optimized impedance and capacitance.

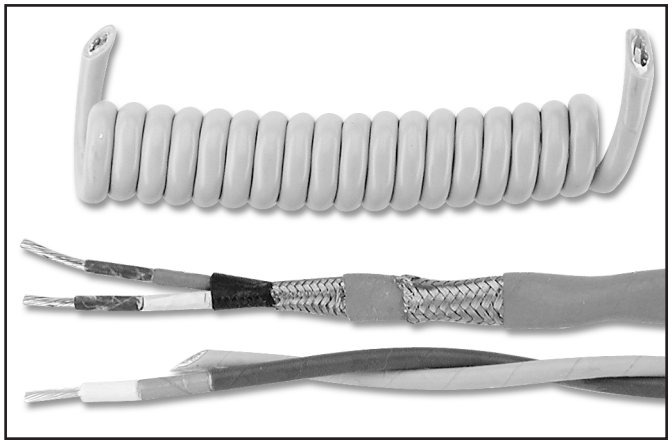
We also offer constructions with reduced inductance in order to minimize signal loss, thereby maintaining signal integrity even over long cable runs.

Our low-noise designs are especially suited to wired microphone applications. Besides providing excellent shielding, the design of these cables minimizes triboelectric noise produced by cable movement.

Audio cables can be supplied with our unique LTE expanded PTFE dielectric for increased signal speed and light weight (see page 3 for details).

The material options listed on this page represent typical choices for high-performance audio cables.

Please contact your Thermax representative with your specific requirements.



Construction Options

Typical interconnect and speaker cable materials:

Conductors: Stranded or solid copper or OFHC copper. Silver or tin plated.

Insulation: FEP; LTE;* PTFE; PVC; polyethylene; polypropylene. *LTE is our proprietary expanded extruded PTFE dielectric with enhanced performance such as a dielectric constant of 1.38, and velocity of propagation up to 85% (see page 3 for more details).

Shields: Aluminum/Mylar foil; copper braid, either flat or round wires (silver or tin plated); silver-plated copper Strip Braid or Spiral Strip. Custom combinations of shield types available for enhanced shielding and crosstalk resistance.

Jackets: PVC, available in various durometers and custom matte finishes. PVC is the standard material for audio cables because of its great flexibility, but other jacket materials can be supplied as well.

Typical microphone cable materials:

Conductors: Stranded or solid copper or OFHC copper. Silver or tin plated

Insulation: LTE;* polyethylene; polypropylene; TPR. *LTE is our proprietary expanded extruded PTFE dielectric with enhanced performance such as a dielectric constant of 1.38, and velocity of propagation up to 85% (see page 3 for more details).

Low-Noise Insulation: Semiconductive PVC or PTFE tape.

Shields: Aluminum/Mylar foil; copper braid, either flat or round wires (silver or tin plated); silver-plated copper Strip Braid or Spiral Strip. Custom combinations of shield types available for enhanced shielding and crosstalk resistance.

Jackets: PVC, available in various durometers and custom matte finishes. PVC is the standard material for audio cables because of its great flexibility, but other jacket materials can be supplied as well.

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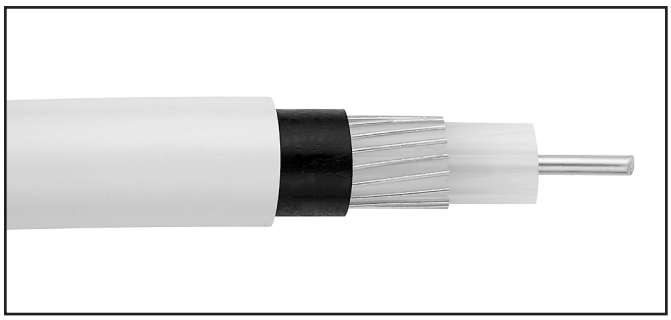


Approvals

75-ohm: U.S. Department of Labor, Mine Safety and Health Administration Approval #7K-SC-265072-MSHA; Pennsylvania Department of Environmental Protection, Bureau of Deep Mine Safety Approval # P-7K-SC-265072-MSHA.

50-ohm: UL Listed Power Limited Circuit Cable Type CL2P.

Thermax Leaky Feeder cable works like an antenna, enabling reliable transmission of data to and from places where radio wave cannot reach.

These cables are ideal for communications or data-transmission applications in such demanding environments as:

- Steel-frame buildings;
- Underground mines;
- Transportation tunnels;
- Railway lines;
- Highway and rail bridges;
- Cargo ships.

The cables shown below are typical constructions; please contact your Thermax representative with your specific requirements.

75-Ohm Double-Jacketed Leaky Feeder Coaxial Cable

Construction Details

Conductor: Solid annealed BC, .092 (2.33) diameter.

Dielectric: Semi-air-spaced polyolefin, .396 (10.06) diameter.

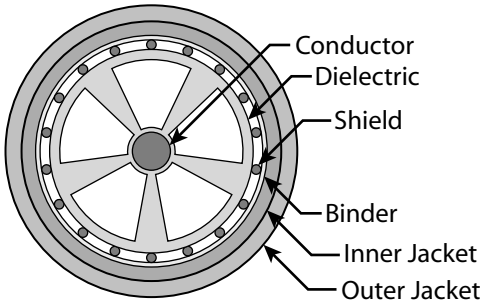
Shield: Spirally-wrapped solid annealed BC wires, each .6 mm diameter.

Binder: Adhesive polyester tape wrap.

Inner Jacket: Black polyolefin, .533 (13.53) diameter.

Outer Jacket: Yellow PVC, .627 (15.93) diameter.

Temperature rating: 75˚ C.



Electrical Performance

Impedance	Velocity of Propagation	Capacitance (pF/ft)	Attenuation @160 MHz		Attenuation @486 MHz	
			dB/100 ft.	dB/100 meters	dB/100 ft.	dB/100 meters
75 ±3.0 ohms	84%	16.1	1.31	4.3	3.18	10.43

50-Ohm Plenum Leaky Feeder Coaxial Cable

Construction Details

Conductor: Solid annealed BC, .092 (2.33) diameter.

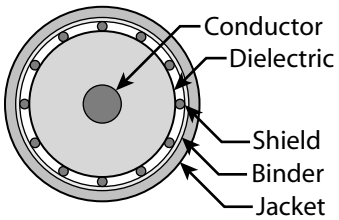
Dielectric: Foamed fluoropolymer, .240 (6.10) diameter.

Shield: Spirally-wrapped solid annealed BC wires, each .6 mm diameter.

Binder: Adhesive polyester tape wrap.

Jacket: Yellow PVDF, .340 (8.64) diameter.

Temperature rating: 125˚ C.



Electrical Performance

Impedance	Velocity of Propagation	Capacitance (pF/ft)	Attenuation @160 MHz		Attenuation @486 MHz	
			dB/100 ft.	dB/100 meters	dB/100 ft.	dB/100 meters
50 ±3.0 ohms	81%	25.0	2.3	7.5	4.9	16.0

Dimensions in inches (mm). All values are nominal unless otherwise indicated. **BC:** Bare Copper.

LTE high-speed twinaxial cables—100Ω parallel and twisted pair

LTE low-density, air-expanded PTFE dielectric gives these cables very fast transmission speeds and low loss in a small size, along with exceptional flexibility.

These cables are just some examples of the performance levels provided by LTE dielectric—many other configurations are also available.

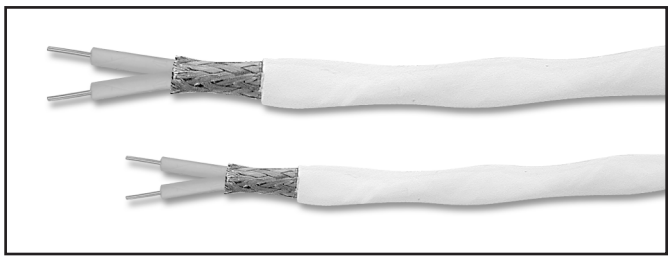
Performance:

Temperature rating: 919 series: 90˚ C.
TC-746: 150˚ C.

Velocity of propagation: 83%.

Time delay: 1.23 ns / foot nominal.

See page 3 for more information on LTE dielectric.



Construction Details

Center Conductor: 919 series: Solid silver-plated copper.
TC-746: Stranded silver-plated high-strength copper alloy.

Primary Insulation: LTE (extruded expanded low-density PTFE).

Drain Wire: 919 series: Same as conductor.
TC-746: None.

Shield: 919 series: Aluminum/polyethylene/aluminum tape.
TC-746: AWG 38 nickel-plated copper, 95% coverage.

Jacket: 919 series: Extruded PVC, white;
TC-746: Extruded ETFE, white.

Options: Other jacket colors; other conductor materials, gauges and / or stranding; other impedances; other transmission speeds.

Dimensions and Weights

Thermax P/N	Component Wire		Component Wire Insulation Diameter	Shield Diameter	Jacket Diameter	Weight
	Conductor Diameter/Stranding	Lay				
919-26XV	.0159 (.40) Solid SPC	Parallel	.037 (.94)	.076 (1.93)	.094 (2.39)	5.2 (7.7)
919-28XV	.0126 (.32) Solid SPC	Parallel	.033 (.84)	.068 (1.73)	.086 (2.18)	4.0 (5.9)
TC-746	.024 (.61) 19/36 SPCA	Twisted (1.75)	.074 (1.88)	.162 (4.12)	.182 (4.62)	18.0 (26.8)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). All values are nominal unless otherwise indicated.
SPC: Silver-plated copper. **SPCW:** Silver-plated copper-covered steel (copperweld). **SPCA:** Silver-plated high-strength copper (alloy 135).

Electrical Performance

Thermax P/N	Impedance	Capacitance (pF/ft)	Attenuation (dB/100 ft.)				Operating Voltage (V)	Dielectric Strength (VAC RMS)
			100 MHz	400 MHz	700 MHz	900 MHz		
919-26XV	100Ω ±10%	11.0	11.5	23	30	34	30	500
919-28XV	100Ω ±10%	11.0	14	28	37	42.5	30	500
TC-746	125Ω ±10%	17.0	1.0 dB @ 2 MHz				30	1000

All values are nominal unless otherwise indicated.

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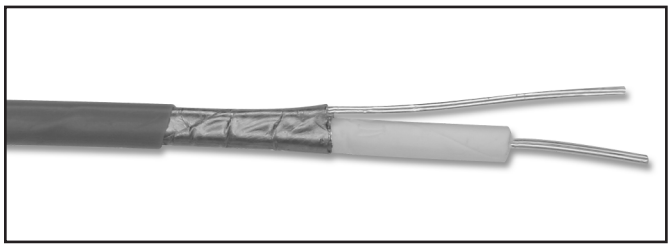
LTE high-performance transmission cable—75Ω high-speed miniature



Construction Details

Center Conductor: Silver-plated copper.

Primary Insulation: LTE (extruded expanded low-density PTFE).

Drain Wire: Solid SPC, 32 AWG, parallel to component wire.

Shield: Wrapped foil / film tape.

Jacket: Extruded FEP, natural color.

Options: Other jacket colors; other conductor materials and / or stranding; other impedances.

LTE low-density, air-expanded PTFE dielectric gives these cables very fast transmission speed and low loss in a small size, along with exceptional flexibility.

This cable is just one example of the performance levels provided by LTE dielectric—many other configurations are also available.

Performance:

Temperature rating: 200˚ C.

Impedance: 75 ±7 Ω.

Velocity of propagation: 84% nominal.

Capacitance: 17 pF / foot nominal.

Time delay: 1.21 ns / foot nominal.

Dimensions and Weight

Thermax P/N	Inner Conductor		Insulation Diameter	Shield Diameter*	Jacket Diameter	Weight	Min. Bend Radius
	Diameter	Stranding					
E75-132DAMXE	.008 (.20)	Solid SPC	.032 (.81)	.046 (1.17)	.060 (1.52)	2.1 (3.1)	.3 (7.6)

Dimensions in inches (mm). Weights in pounds/1000 feet (Kg/1000 M). **SPC:** Silver-plated copper. *Measured over drain wire.

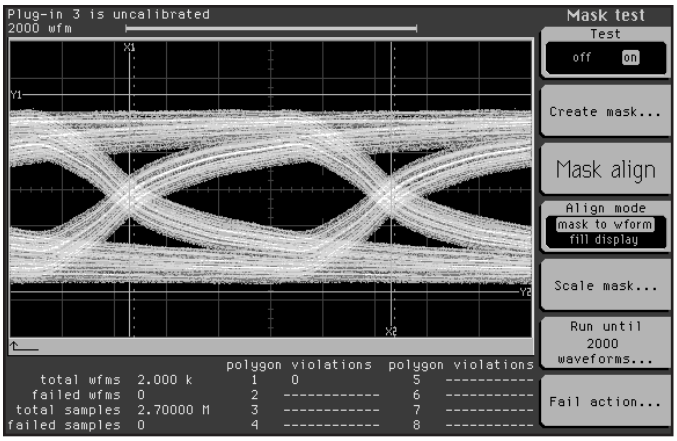
CellTec™ Parallel-Pair Cable

CellTec™ low-density foam dielectric delivers the stable performance characteristics required for high-speed differential signal transmission.

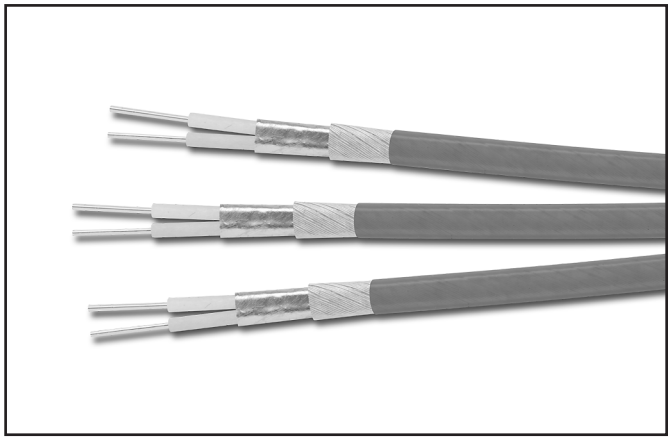
These low-skew parallel-pair constructions are designed for use in computer interconnect and telecommunications applications, and are compatible with 2 mm and 2.54 mm backplane systems.

Enhanced low-skew versions are available for system speeds to 2.5 Gbps and beyond.

These cables are just some examples of the performance levels provided by CellTec dielectric—many other configurations are also available.



Typical eye-pattern test.



Construction Details

Conductor: Solid or stranded silver-plated copper.

Insulation: CellTec.

Shield: Aluminum/polyester tape.

Drain Wire: Solid or stranded tin-plated copper.

Jacket: PVC.

Physical Properties

Conductor			Insulation Diameter	Drain Wire		Jacket Dimensions
AWG	Type	Diameter		AWG	Type	
22	Solid SPC	.0253 (.64)	.076 (1.9)	24	Solid TPC	.088 x .164 (2.2 x 4.2)
	7/30 SPC	.030 (.76)	.082 (2.1)		7/32 TPC	.094 x .176 (2.4 x 4.5)
24	Solid SPC	.0201 (.54)	.059 (1.5)	26	Solid TPC	.071 x .130 (1.8 x 3.3)
	7/32 SPC	.024 (.60)	.065 (1.7)		7/34 TPC	.077 x .142 (2.0 x 3.6)
26	Solid SPC	.0159 (.40)	.047 (1.2)	28	Solid TPC	.059 x .106 (1.5 x 2.7)
	7/34 SPC	.019 (.48)	.052 (1.3)		7/36 TPC	.062 x .116 (1.6 x 2.9)
28	Solid SPC	.0126 (.32)	.037 (.9)	30	Solid TPC	.049 x .086 (1.2 x 2.2)
	7/36 SPC	.015 (.38)	.042 (1.1)		7/38 TPC	.054 x .096 (1.4 x 2.4)
30	Solid SPC	.010 (.25)	.029 (.7)	32	Solid TPC	.041 x .070 (1.0 x 1.8)
	7/34 SPC	.012 (.30)	.033 (.8)		7/40 TPC	.045 x .078 (1.1 x 2.0)

Dimensions in inches (mm). **SPC:** Silver-plated copper. **TPC:** Silver-plated copper.

Electrical Performance

AWG	Impedance	Capacitance (pF/ft)	Time Delay Skew (ps / ft.)	Conductor DCR (Ω / 100 ft.)		Attenuation (dB / M @ 1.25 GHz)	
				Solid	Stranded	Solid Conductor	Stranded Conductor
22	100 Ω	12	<3.0	16.2	15.4	.70	.77
24	100 Ω	12	<3.0	25.7	24.0	.91	1.00
26	100 Ω	12	<3.0	41.0	38.8	1.11	1.22
28	100 Ω	12	<3.0	65.3	62.2	1.43	1.58
30	100 Ω	12	<3.0	104.0	98.0	1.67	1.84

All values are nominal unless otherwise indicated.

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