Amphenol RJ Field Series

NO HAZARDOUS ON-FIELD CABLING AND GROUNDING

The Amphenol RJ Field series allows the use of an Ethernet Class D/CAT5e and Class E/CAT6 connection for Ethernet over twisted-pair networks in harsh environments. The RJStop® connection system protects from shock, dust and fluid. No hazardous on-field cabling and grounding required!

- Connections for 10Base-T, 100Base-TX, or 1000Base-T networks
- No tools required
- Mechanical coding/polarization

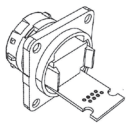
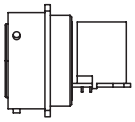
APPLICATIONS

- Robotics
- Military data hubs
- Special machines
- Welding machines
- Communications
- CNC machines
- Process & motion control
- Diagnostics

FEATURES

- CAT5e & CAT6 Cable
- USB-A 2.0, USB-B 2.0, USB-A 3.0
- Mating systems – tri-start thread, triple-lead, latch, push-pull

TECHNICAL SPECIFICATIONS

							
SERIES	RJF RB	RJF 544	RJF-EZ	RJF	RJFTV	USBFTV (USB-A)	USBBFTV (USB-B)
Shape	Circular	Circular	Rectangular	Circular	Circular	Circular	Circular
Coupling System	Reverse Bayonet	Push-Pull	Lever	Tri-Start Thread	Tri-Start Thread	Tri-Start Thread	Tri-Start Thread
Material	Plastic	Plastic	Plastic	Metal	Metal	Metal	Metal
Data Type	CAT5e & CAT6	CAT5e & CAT6	CAT5e	CAT5e & CAT6	CAT5e & CAT6	USB-A 2.0 & 3.0	USB-B 2.0
Number of possible Codings (polarizations)	1	1	1	4	4	4	4
RoHS Options Available	Yes	No	No	Yes	Yes	Yes	Yes
Mating Cycles	500 min.	500 min.	500 min.	500 min.	500 min.	up to 1500	up to 1500

RJF FEATURES

RJF

MAIN CHARACTERISTICS

- Compliant with IEC 60603-7 variant 11
- Tri-start threading coupling ("audible & visual" coupling signal)
- Robust metallic shells based on MIL-DTL-26482H
- RJ45 cordset retention in the plug: 100 N in the axis
- Mating cycles: 500 min.
- Sealed against fluids and dust (IP68)
- Shock, vibration and traction-resistant
- No cabling operation in-field and no tools required
- Mechanical coding / polarization (4 positions)
- Compatible with cable diameters from 0.236 in. (6 mm) to 0.512 in. (13.0 mm)

ENVIRONMENTAL PROTECTION

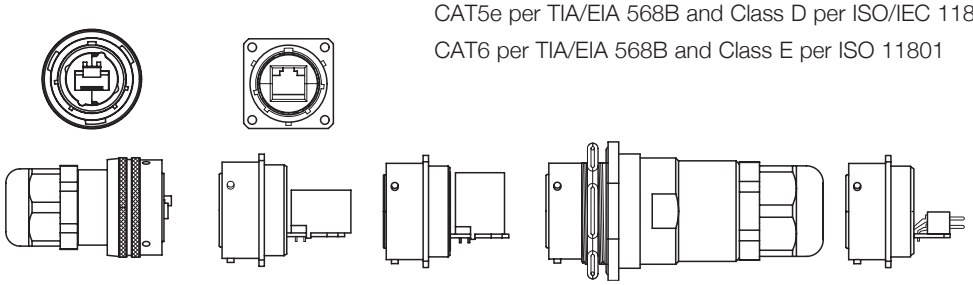
- Sealing: IP68
- Salt spray: 48-hour with nickel-plating > 96-hour with black coating > 500-hour with olive drab cadmium
- Fire-retardant/low-smoke: UL94 V0 and NF F 16 101 & 16 102
- Vibrations: 10 – 500 Hz, 10 g, 3 axes: no discontinuity > 10 nano s.
- Shocks: IK06; weight of 250 g drop from 15.75" (40 cm) onto connectors (mated pair)
- Humidity: 21 days, 109.4°F (43°C), 98% humidity
- Thermal shock: 5 cycles at -40°F to +212°F (-40°C to +100°C)
- Operating temperature: -40°F to +185°F (-40°C to +85°C)

DATA TRANSMISSION

10 Base-T, 100 Base-TX, and 1000 Base-T networks

CAT5e per TIA/EIA 568B and Class D per ISO/IEC 11801

CAT6 per TIA/EIA 568B and Class E per ISO 11801



	PLUGS		RECEPTACLES							
PLATING	CABLE GLANDS		STANDARD BOX MOUNT	CORDSET BOX MOUNT	RIGHT ANGLE FEMALE RJ45	INLINE CABLE MOUNT		PC TAILS RECEPTACLES	CABLE GLANDS	
	PLASTIC	METAL				PLASTIC	METAL		PLASTIC	METAL
Black-Anodized	**RJF6B**	RJF6MB	**RJF21B††**	**RJF22B**100BTX††**	RJF21RAB††	RJF2PEWF1B††	RJF2PEMWF1B††	RJF2SA5B††	RJF2PE1B††	RJF2PEM1B††
Nickel	**RJF6N**	**RJF6MN**	**RJF21N††**	**RJF22N**100BTX††**	RJF21RAN††	RJF2PEWF1N††	RJF2PEMWF1N††	RJF2SA5N††	RJF2PE1N††	RJF2PEM1N††
Olive Drab Cadmium	**RJF6G**	**RJF6MG**	**RJF21G††**	RJF22G**100BTX††	RJF21RAG††	RJF2PEWF1G††	RJF2PEMWF1G††	RJF2SA5G††	RJF2PE1G††	**RJF2PEM1G††**

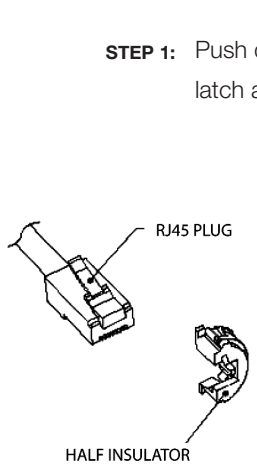
†† Use prefix RJF6 for CAT6 version (receptacles only)

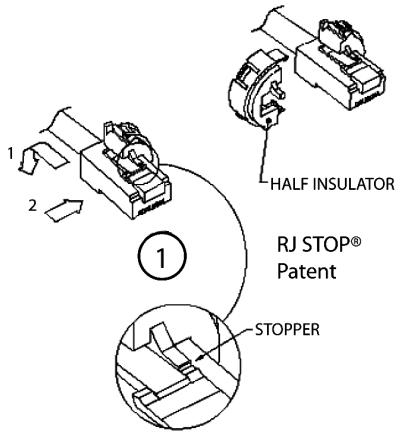
** Select for Cordset Length 03 = 11.81 (0.30M) 05 = 19.68 (0.50M) 10 = 39.37 (1.00M) 15 = 59.05 (1.50M)

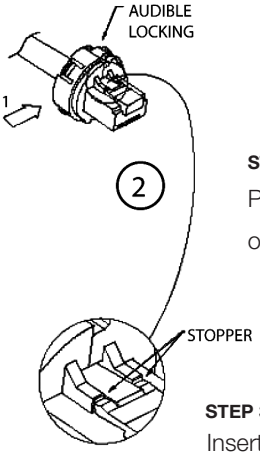
BOLD = Stocked items

ASSEMBLY INSTRUCTIONS

STEP 1: Push down the RJ45 cordset latch and fix it inside the insert







STEP 2:
Press in and click the other part of the insert

STEP 3:
Insert in the metallic housing

Universal: Can be used with all standard RJ45 CAT5e cordset brands

All dimensions in inches (millimeters in parenthesis)

RJF FEATURES

RJF TRANSVERSALLY-SEALED

	RECEPTACLE			JAM NUT RECEPTACLE		
PLATING	STANDARD SEALED BOX MOUNT	CORDSET SEALED BOX MOUNT	RIGHT ANGLE SEALED FEMALE RJ45	STANDARD SEALED JAM NUT	CORDSET SEALED JAM NUT	RIGHT ANGLE SEALED FEMALE RJ45
Black-Anodized	RJF2S✱1B††	RJF2S✱2B✱✱100BTX††	RJF2S✱1RAB††	RJF7S✱1B††	RJF7S✱2B✱✱100BTX††	RJF7S✱1RAB††
Nickel	RJF2S✱1N††	RJF2S✱2N✱✱100BTX††	RJF2S✱1RAN††	RJF7S✱1N††	RJF7S✱2N✱✱100BTX††	RJF7S✱1RAN††
Olive Drab Cadmium	RJF2S✱1G††	RJF2S✱2G✱✱100BTX††	RJF2S✱1RAG††	RJF7S✱1G††	RJF7S✱2G✱✱100BTX††	RJF7S✱1RAG††

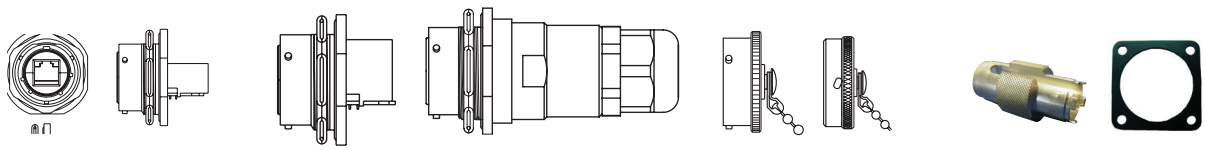
✱ Coding A, B, C, D ✱✱ Select for Cordset Length 03 = 11.81 (0.30M) 05 = 19.68 (0.50M) 10 = 39.37 (1.00M) 15 = 59.05 (1.50M)
†† Use prefix RJF6 for CAT6 (receptacles only)

BOLD =Stocked Items

RJF HERMETICALLY SEALED

	RECEPTACLE			JAM NUT RECEPTACLE		
PLATING	STANDARD HERMETIC BOX MOUNT	CORDSET HERMETIC BOX MOUNT	RIGHT ANGLE HERMETIC FEMALE RJ45	STANDARD HERMETIC JAM NUT	CORDSET HERMETIC JAM NUT	RIGHT ANGLE HERMETIC FEMALE RJ45
Black-Anodized	RJF2H✱1B††	RJF2H✱2B✱✱100BTX††	RJF2H✱1RAB††	RJF7H✱1B††	RJF7H✱2B✱✱100BTX††	RJF7H✱1RAB††
Nickel	RJF2H✱1N††	RJF2H✱2N✱✱100BTX††	RJF2H✱1RAN††	RJF7H✱1N††	RJF7H✱2N✱✱100BTX††	RJF7H✱1RAN††
Olive Drab Cadmium	RJF2H✱1G††	RJF2H✱2G✱✱100BTX††	RJF2H✱1RAG††	RJF7H✱1G††	RJF7H✱2G✱✱100BTX††	RJF7H✱1RAG††

✱ Coding A, B, C, D ✱✱ Select for Cordset Length 03 = 11.81 (0.30M) 05 = 19.68 (0.50M) 10 = 39.37 (1.00M) 15 = 59.05 (1.50M)
†† Use prefix RJF6 for CAT6 (receptacles only)



	JAM NUT RECEPTACLE			ACCESSORIES						
				CABLE GLAND		DUST CAP+			INSERT	
PLATING	STANDARD JAM NUT	CORDSET JAM NUT	RIGHT ANGLE FEMALE RJ45	PLASTIC	METAL	PLUG §	BOX MOUNT §	JAM NUT§	REMOVAL TOOL	FLANGE GASKET
Black-Anodized	RJF71B††	RJF72B✱✱100BTX††	RJF71RAB††	RJFPE1B	RJF7PEM1B	RJFC6B	RJFC2B	RJFC7B	RJFODE	JE18
Nickel	RJF71N††	RJF72N✱✱100BTX††	RJF71RAN††	RJFPE1N	RJF7PEM1N	RJFC6N	RJFC2N	RJFC7N		
Olive Drab Cadmium	RJF71G††	RJF72G✱✱100BTX††	RJF71RAG††	RJFPE1G	RJF7PEM1G	RJFC6G	RJFC2G	RJFC7G		

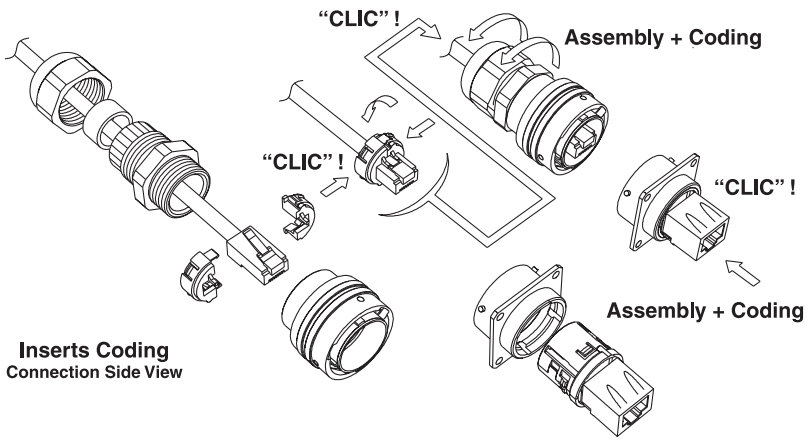
†† Use prefix RJF6 for CAT6 (receptacles only)
✱✱ Select for Cordset Length 03 = 11.81 (0.30M)
05 = 19.68 (0.50M) 10 = 39.37 (1.00M) 15 = 59.05 (1.50M)

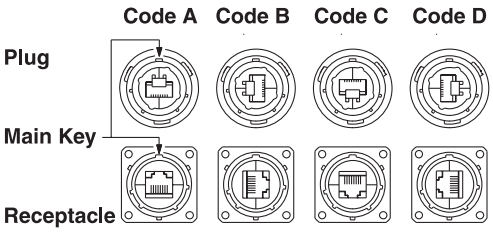
\+ Metallic Chains Available
§ Nylon Cord Lengths: Plugs - 6.30 (160.0)
Box Mount and Jam Nut - 4.134 (105.0)

BOLD = Stocked items

ASSEMBLY INSTRUCTIONS

Easy and Safe: No field cabling tools required

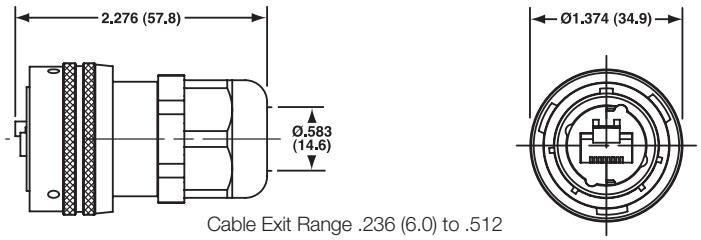




All dimensions in inches (millimeters in parenthesis)

PLUG

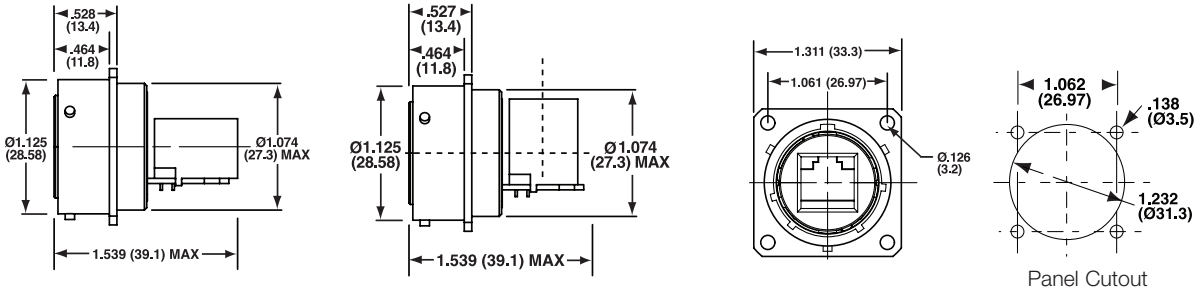
RJF 6
Plug with plastic or metal gland



Cable Exit Range .236 (6.0) to .512 (13.0)

RECEPTACLES

RJF6 2
RJF 2
Square flange receptacle, 4 mounting holes

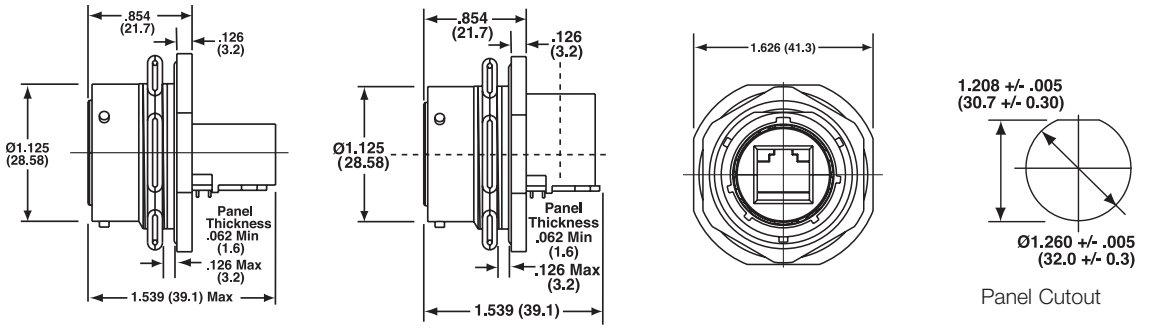


Straight

Right Angle

Panel Cutout

RJF6 7
RJF 7
Jam nut receptacle
Hexagonal-nut mounting

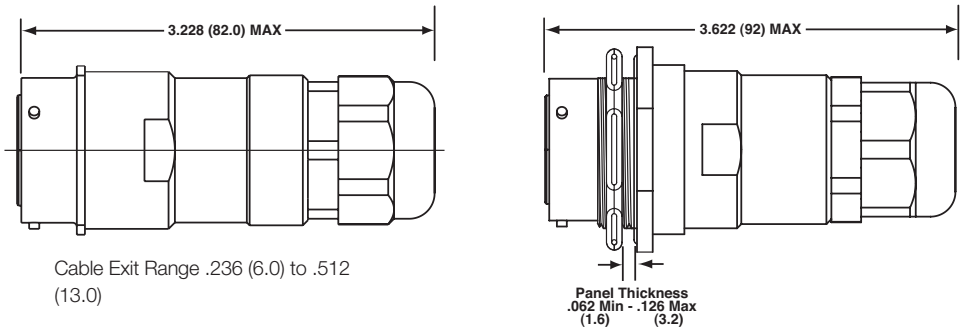


Straight

Right Angle

Panel Cutout

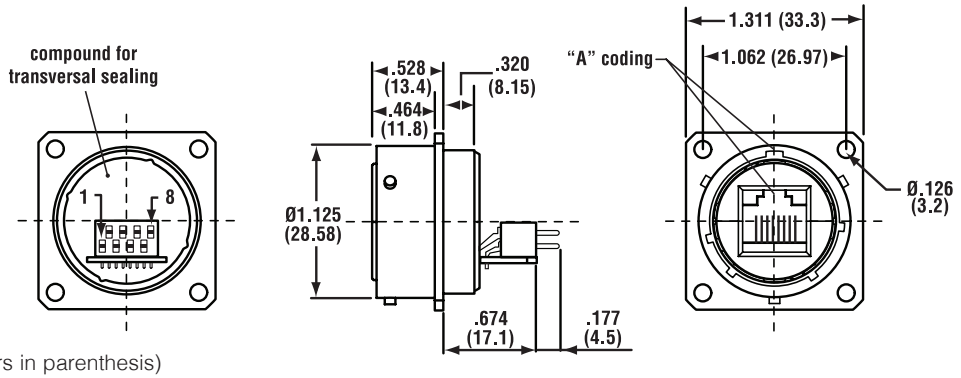
RJF6 2PE/2PEM
RJF 2PE/2PEM
RJF6 72PE/7PEM
RJF 72PE/7PEM
IP68 inline receptacles with plastic or metal gland



Cable Exit Range .236 (6.0) to .512 (13.0)

PCB TAILS RECEPTACLES

PCB LAYOUT



All dimensions in inches (millimeters in parenthesis)

SELF-CLOSING CAP

This self-closing cap automatically protects the RJ Field square flange receptacles (MIL-C-26482-type), protecting your system from dust and water projections. The same cap can be used to protect USB and IEEE1394 receptacles. A spring automatically closes the upper part of the cap when either the RJ Field plug, RJ45 cordset, USB or IEEE1394 cordset, or USB key are removed from the receptacle.




Plating	RJ45	USB-A	USB-B	IEE1394
Black-Anodized	RJF21BSCC	USBF21BSCC	USBBF21BSCC	FWF21BSCC
Nickel	RJF21NSCC	USBF21NSCC	USBBF21NSCC	FWF21NSCC

BOLD = Stocked Items

CAT5e & CAT6 CABLE

General construction: A four-pair, 24 AWG, 100 Ohm SFTP round patch cable, designed to the ISO / IEC 11801 Category 5e requirements (CAT5e on 76m). The cable contains four twisted pairs, cabled, double-shielded with Kevlar reinforcement strands, jacketed in black UV-resistant polyurethane HFFR. Designed for fixed or portable applications in harsh environments.

HFFR: HALOGEN-FREE FLAME-RETARDANT

Jacket Compound Specification:

Halogen-free flame-retardant polyether-based polyurethane. Glossy finish.
Excellent hydrolysis resistance. High microbial resistance. UV-resistant. High flexibility.

CAT5e

PHYSICAL CHARACTERISTICS

Conductors	24 AWG (0.25 mm²) Tinned copper, 7x0.2 mm
Insulation	Color-coded 568-B, Linear low-density polyethylene, Nom. Dia. 0.039" (1mm) nickel
Assembly	Pairs cabled with Kevlar-strength members and separation-tape wrapped
Shields	Inner: Aluminum mylar 100% coverage Outer: Tinned-copper braid 80% coverage
Jacket	Black, special PUR compound
Weight	40 lbs / mft (59 kg/km)
Outside Dia.	0.28" (7.1 mm) nom.
Min. Bend Radius (During installation)	67.5mm (9 x O.D.)
Min. Bend Radius (During operation)	37.5mm (5 x O.D.)
Min. Flexes to Failure	Passes IEC 61156-6 requirements
Temperature	-40°F to +185°F (-40°C to +85°C)

ELECTRICAL CHARACTERISTICS

DC Resistance	96 Ohms/KM @ 20°C			
Impedance	100 ± 15 Ohms 1-100 MHz			
Attenuation	772 KHz	2.70 db/100m nom.	20 MHz	13.8 db/100m nom.
	1 MHz	3.15 db/100m nom.	31.25 MHz	17.7 db/100m nom.
	4 MHz	6.45 db/100m nom.	62.5 MHz	25.6 db/100m nom.
	10 MHz	9.90 db/100m nom.	100 MHz	33 db/100m nom.
	16 MHz	12.3 db/100m nom.		
Capacitance	46pF/m nom. @ 1KHz			
LCL	43 dB min. @ 64 KHz			
Capacitance Unbalance	3.4 pF/m max. @ 1KHz (wire to ground)			
Insulation Resistance	150 M Ohm min.			
Voltage Rating	230 VMS			
Dielectric Strength	VAC/1 min - 700 v/min.			
Propagation Delay	(100 MHz) 5.2 ns/m max. @ 100 MHz			
Delay Skew	20 ns/100m max. @ 100 MHZ			
Resistance Unbalance	3% max. @ 20°			
Structural Return Loss	(100 MHz) 23 db/100m min. @ 1-20 MHz			
Spark Test	3 KV (tested during production)			
Velocity of propagation	67% nom.			

CAT6

PHYSICAL CHARACTERISTICS

Conductors	26 AWG (0,14 mm²) tinned copper
Insulation	Polythylene Nom. Dia. 0,039" (1mm)
Assembly	Pairs cabled with Kevlar strength members and separation tape wrapped
Shields	Inner: aluminium mylar 100% coverage Outer: tinned copper braid 80% coverage
Jacket	Black, special PUR compound
Weight	36.9 lbs / mft (55 kg/km)
Outside Dia.	0.272"(6.9 mm) nom.
Min. Bend Radius (During installation)	72mm (10x O.D.)
Min. Bend Radius (During operation)	36mm (5 x O.D.)
Min. Flexes to Failure	Passes IEC 61156-6 requirements
Temperature	-40°F to +185°F (-40°C to +85°C)

ELECTRICAL CHARACTERISTICS

DC Resistance	290 Ohm/Km		
Impedance	100+/-5 Ohm		
Attenuation	Frequency	Insertion Loss	N.E.X.T (Near End Crosstalk Loss)
	1MHz	3.1 dB	75.3 dB min
	4MHz	5.8 dB	66.3 dB min
	8MHz	8.0 dB	61.8 dB min
	10MHz	9.0 dB	60.3 dB min
	16MHz	11.4 dB	57.2 dB min
	20MHz	12.8 dB	55.8 dB min
	25MHz	14.1 dB	54.3 dB min
	31.25MHz	16.1 dB	52.8 dB min
	62.5MHz	23.2 dB	48.4 dB min
	100MHz	29.9 dB	45.3 dB min
	200MHz	43.7 dB	40.8 dB min
	250MHz	49.7 dB	39.3 dB min
Capacitance	50nF/km nom. @ 1KHz		
Capacitance Unbalance	1600 pF/km max. @ 1KHz (wire to ground)		
Insulation Resistance	5 GOhm/km		
Voltage Rating	230 V		
Dielectric Strength	VAC/1 min - 700 v/min.		
Propagation Delay	4.6 ns/m		
Delay Skew	45 ns/100m		
Resistance Unbalance	2%		
Structural Return Loss	15.6dB		
Velocity of propagation	72% nom.		

REEL OF CABLE (WITHOUT RJ45 PLUG ON ENDS)

CAT5e		CAT6	
LENGTH (M/FT)	PART NUMBER	LENGTH (M/FT)	PART NUMBER
100 m /~328 ft	190-038045-00	100 m /~328 ft	191-031179-00
300 m /~984 ft	190-038045-01	300 m /~984 ft	191-031179-01