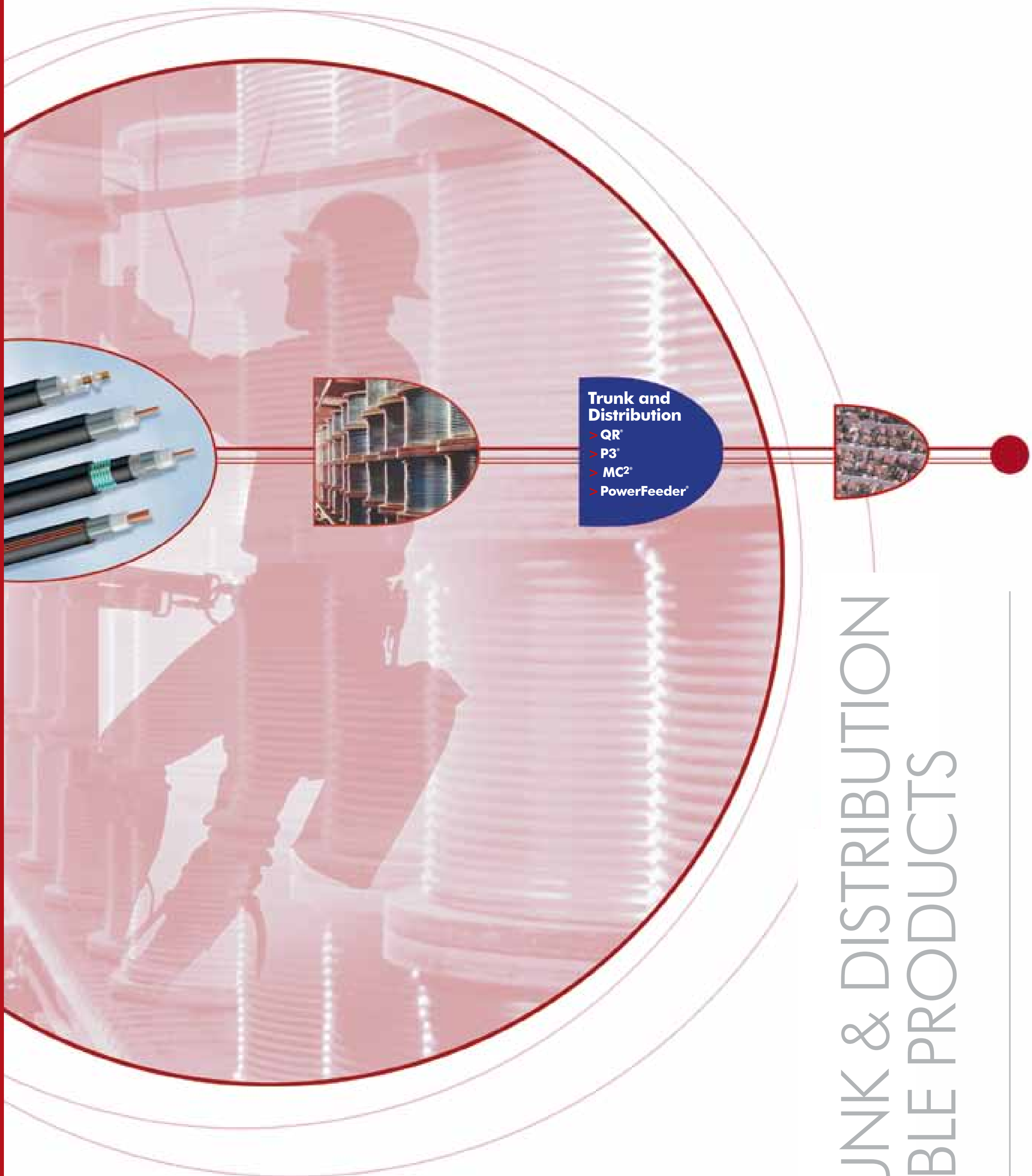


TRUNK & DISTRIBUTION CABLE PRODUCTS

For more information, call Customer Service at 800.982.1708 or 828.324.2200 • Fax 828.328.3400 • custserv@commscope.com

COMMSCOPE®

Trunk and Distribution

CommScope Trunk and Distribution Cable Products

Overview

COMMSCOPE®

Why Deploy Anything But Advanced Cabling Technology to Transport High-Speed Services?

The primary distribution ring and trunk section of an HFC network mandates strong cable designed to withstand the rigors of environmental elements. CommScope meets these demands with cable renowned in the cable television industry - QR®, MC2® and P3®. Constructions for underground installation feature Migra-Heal® floodant to isolate jacket damage and inhibit corrosion. Other available product options include armor, messengers, dual jackets and CableGuard®, a patented jacket featuring compartmentalized cells designed to offer excellent cut-through and crush resistance.

Compelling Reasons to Build With QR®

Our patented QR cable is a time-tested design with superior reliability and flexibility. We are so certain of this claim that we offer an unprecedented 10-year warranty on QR. CommScope relies on proven technology and advanced design and development. The end result is a trunk and distribution cable that easily integrates with existing cable plant, but offers the latest advances in performance and reliability.

QR®

CommScope Trunk and Distribution Cable Products

Overview

QR® – More Miles for Your Money

Here's why leading broadband service providers around the world standardize on QR as the broadband coaxial transmission cable of choice:

- For less money, QR delivers better electrical and mechanical performance than more expensive traditional cables.
- QR benefits from an engineered connector system that creates a "triple grip" on the cable (center conductor, shield and jacket). This system provides the simplest, quickest and most consistent connector installation yielding extremely high reliability.
- Creatively deployed, QR can reduce the number of actives required in a system to save you even more money.

MC2®

CommScope is the only U.S. manufacturer of air dielectric cable designed especially for the broadband market. MC2 air dielectric composite construction offers a great balance of important cable properties such as attenuation, bending radius, loop resistance and ease of installation.

PowerFeeder® – Cable for the "Always On" Network

PowerFeeder, a novel coaxial cable optimized for reliable power delivery, features extremely low resistance and minimizes voltage drops over long distances. The low resistance components of PowerFeeder cables play an essential role in the deployment of lifeline telephony and other critical data services. These products enable centralized power supplies and the delivery of power whenever and wherever needed.

P3® – The Cable Upon Which an Industry was Built

P3 has proven robust and reliable through years of successful coaxial installations. Low attenuation and inherent strength make it a good choice for distribution applications. P3 is available with flooding, integrated messengers, armor or a Cable Guard jacket.

CommScope Trunk and Distribution Cable Products

Overview

Request a FREE Broadband Applications & Construction Library

CommScope's Broadband Applications & Construction Library includes a 4-piece set of valuable reference manuals plus a DVD containing essential training videos on topics such as connectorization, expansion loop formation and fiber optic splicing. These tools teach you how to protect the integrity of your broadband plant while lowering operating/ installation costs.

CommScope's Broadband Resource Center™

This repository of experience, knowledge, services & tools is provided to CommScope customers to assist installers, technicians, engineers, designers or managers of broadband service providers. Tools in various media and formats include: SpanMaster® software for cable sag & tension calculations; attenuation slide rules; & call center spec assistance & review. Call us at 1-866-333-3BRC (3272) or e-mail brc@commscope.com for answers to product questions or issues related to any CommScope broadband product.

From construction and installation practices, to performance and testing of cable – CommScope Construction Manuals are simply a "must-have" for anyone upgrading or maintaining broadband networks. Download a PDF version at our website: http://www.commscope.com or request a set by phone at 1-800-982-1708.

Trunk and Distribution Cable Catalog Numbering Key

Steps to Building the Catalog Number for the Cable You Need

COMMSCOPE®

Sample QR® Product Constructions

QR 540 JCASS-T

Prefix
QR®

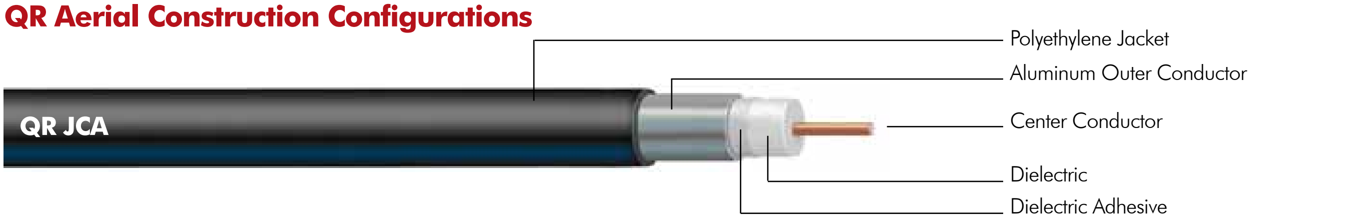
Size
(diameter over shield)
320
540
715
860

PE Jacket
Copper Aluminum
Floodant
Tracer

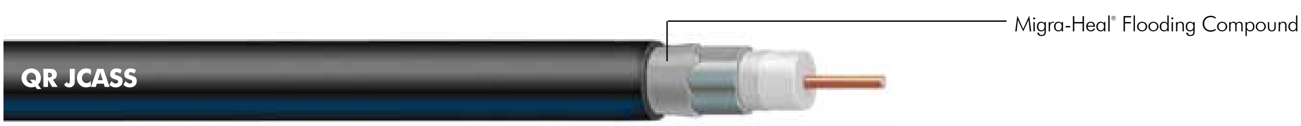
Suffix
- J = Jacketed
- CA = Copper Aluminum
- SS = Migra-Heal® Flooding Compound
- SP = Aerial Floodant
- T = Tracer (2 stripes 180° apart)
- M = Messenger
- EHS = Extra High Strength

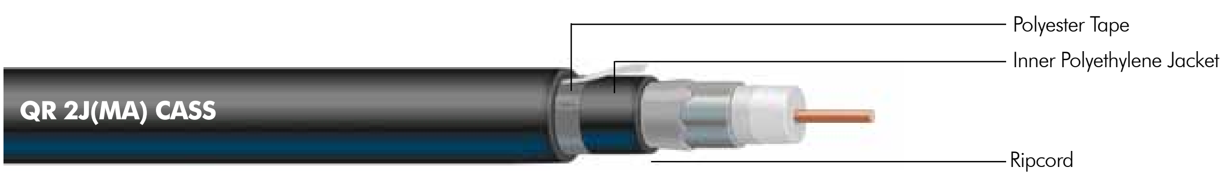
(This is a sample list, other options are available)

QR Aerial Construction Configurations



QR Underground Construction Configurations





Trunk and Distribution Cable Catalog Numbering Key

Steps to Building the Catalog Number for the Cable You Need

COMMSCOPE®

Sample P3® Product Constructions

P3 625 JCAM188

- 188 — Messenger Diameter
- M — Messenger
- CA — Copper Aluminum
- J — PE Jacket

Prefix

P3®

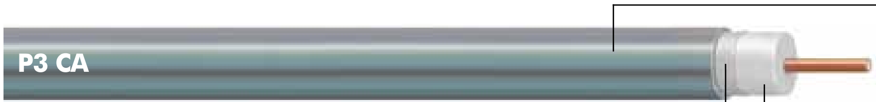
Size
(diameter over shield)

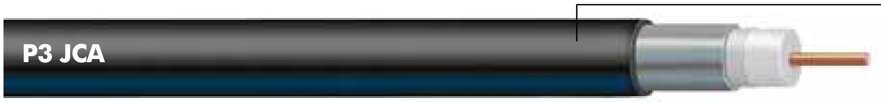
500 750
565 840
625 875
700

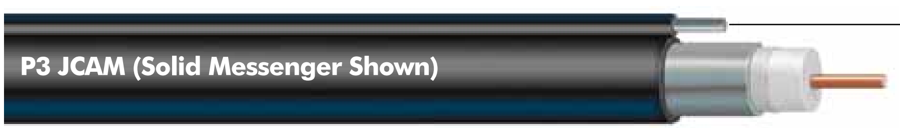
Suffix

J = Jacketed
CA = Copper Aluminum
SS = Migra-Heal® Flooding Compound
SP = Aerial Floodant
T = Tracer (2 stripes 180° apart)
M = Messenger
CG = CableGuard®
EHS = Extra High Strength
(This is a sample list, other options are available)

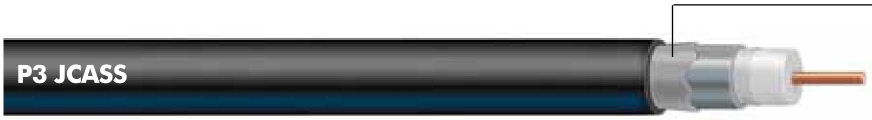
P3 Aerial Construction Configurations

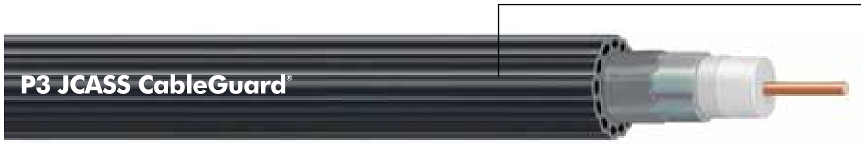






P3 Underground Construction Configurations





Trunk and Distribution Cable Catalog Numbering Key

Steps to Building the Catalog Number for the Cable You Need

Sample MC²® Product Constructions

MO 500 CMA

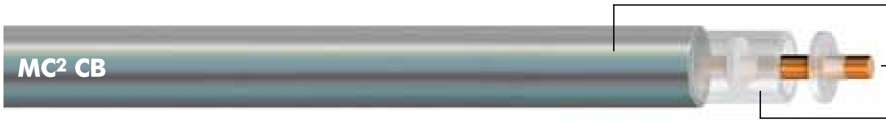
Prefix
MC²® (MO)

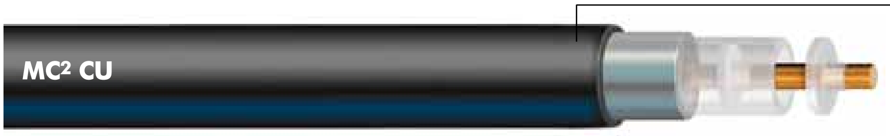
Size *(diameter over shield)*
- 500
- 650
- 750

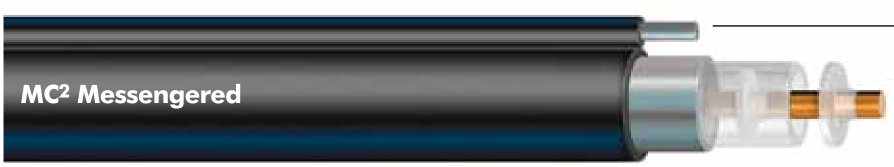
109 Messenger (CMA)

Suffix
- CB = Bare
- CU = Jacketed
- CJ = Flooded
- CMA = 109 Messenger *(500 only)*
- CMC = .250 Messenger *(650 & 750)*
- CG = Armored

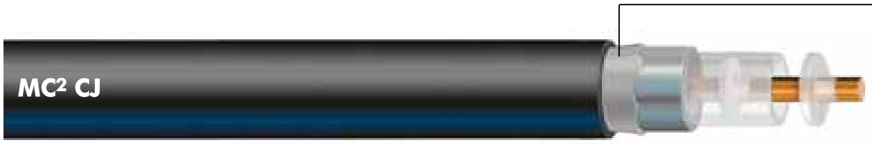
MC² Aerial Construction Configurations

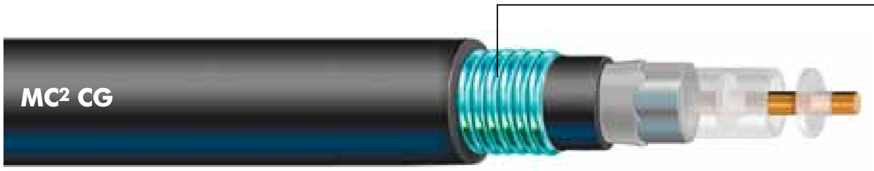






MC² Underground Construction Configurations





QR® 320 Series Cables
Product Descriptions

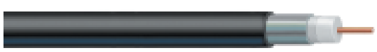
CommScope's patented QR® coaxial cable was developed to meet the increasing demands of tomorrow's broadband networks. QR has the highest reliability and flexibility of any Trunk and Distribution coaxial cable, low RF attenuation and an unprecedented 10 year warranty.

All QR cable products offer tough polyethylene jackets and a standardized, environmentally sealed connector interface engineered for reliability and craft friendliness.

QR 320 is optimized for use in multiple dwelling units (MDU) and feeder applications. QR 320 offers unmatched flexibility, reliability and cost effectiveness.

Standard QR Construction
A precision aluminum strip is formed and continuously RF welded around a high compression micro-cellular foam dielectric core, minimizing RF egress and ingress, and the rigidity common in traditional trunk and distribution coaxial products. The shield is fully bonded to the dielectric core, as is the copper clad aluminum center conductor. A tough polyethylene jacket is applied standard, which enhances cable reliability and allows QR's unique connector technology to form an environmental seal.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 320 JCA 	offers all of QR's standard construction features	47 lbs/kft (70 kg/km)	63 lbs/kft (94 kg/km)	3700 ft (1128 m)
QR 320 JCAM109 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	89 lbs/kft (133 kg/km)	107 lbs/kft (159 kg/km)	3700 ft (1128 m)
QR 320 JCAM083 EHS (Also Available)		74 lbs/kft (111 kg/km)	88 lbs/kft (131 kg/km)	3700 ft (1128 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 320 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	47 lbs/kft (70 kg/km)	63 lbs/kft (94 kg/km)	3700 ft (1128 m)

Indoor/Riser Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 320 JCAR 	has a flame-retardant polyethylene jacket that meets NEC 820 riser rating	56 lbs/kft (83 kg/km)	72 lbs/kft (108 kg/km)	3700 ft (1128 m)

**Longer (and shorter) lengths are available*

For more information, call Customer Service at 800.982.1708 or 828.324.2200 • Fax 828.328.3400 • custserv@commscope.com

QR® 320 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.071	1.80
Nominal Diameter Over Dielectric	0.294	7.47
Nominal Diameter Over Outer Conductor	0.320	8.13
Nominal Outer Conductor Thickness	0.013	0.34
Nominal Diameter Over Jacket	0.395	10.03
Nominal Jacket Thickness	0.0375	0.95
Messenger Version		
Diameter of Steel Messenger	0.109 0.083	2.77 2.11

Mechanical Characteristics

Minimum Bending Radius		2.0 in.	50.8 mm
Maximum Pulling Tension		120 lbs.	54.5 kg_f
Minimum Breaking Strength of Messenger (EHS)	(109) (.083)	1,800 lbs. 1,000 lbs.	816 kg_f 453 kg_f

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	87%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	3.28 ohms/1000 ft.	10.76 ohms/km
Outer Conductor	0.99 ohms/1000 ft.	3.25 ohms/km
Loop	4.27 ohms/1000 ft.	14.01 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.23	0.24	0.76	0.79
55	0.81	0.84	2.67	2.76
83	1.04	1.07	3.41	3.51
211	1.68	1.73	5.51	5.68
250	1.80	1.86	5.92	6.10
300	1.98	2.04	6.49	6.69
350	2.18	2.25	7.16	7.38
400	2.31	2.38	7.57	7.81
450	2.44	2.52	8.02	8.27
500	2.64	2.72	8.66	8.92
550	2.76	2.85	9.07	9.35
600	2.89	2.98	9.48	9.78
750	3.24	3.34	10.63	10.96
865	3.51	3.62	11.52	11.88
1000	3.77	3.89	12.38	12.76

ACT Advanced Coring Technology®

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

QR® 540 Series Cables
Product Descriptions

CommScope's patented QR® coaxial cable was developed to meet the increasing demands of tomorrow's broadband networks. QR has the highest reliability and flexibility of any Trunk and Distribution coaxial cable, low RF attenuation and an unprecedented 10 year warranty.

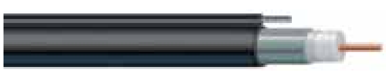
All QR cable products offer tough polyethylene jackets and a standardized, environmentally sealed connector interface engineered for reliability and craft friendliness.

QR 540 is optimized for use in broadband feeder plants. QR 540 offers lower attenuation than larger traditional products, with unmatched flexibility, reliability and cost effectiveness.

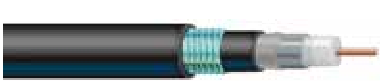
Standard QR Construction

A precision aluminum strip is formed and continuously RF welded around a high compression micro-cellular foam dielectric core, minimizing RF egress and ingress, and the rigidity common in traditional trunk and distribution coaxial products. The shield is fully bonded to the dielectric core, as is the copper clad aluminum center conductor. A tough polyethylene jacket is applied standard, which enhances cable reliability and allows QR's unique connector technology to form an environmental seal.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 540 JCA 	offers all of QR's standard construction features	91 lbs/kft (135 kg/km)	120 lbs/kft (179 kg/km)	3700 ft (1128 m)
QR 540 JCAM109 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	132 lbs/kft (196 kg/km)	170 lbs/kft (253 kg/km)	3700 ft (1128 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 540 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	92 lbs/kft (137 kg/km)	120 lbs/kft (179 kg/km)	3700 ft (1128 m)
QR 540 2J(MA) CASS 	offers dual polyethylene jackets separated with tough polyester tape for greater cut-through resistance	121 lbs/kft (180 kg/km)	232 lbs/kft (344 kg/km)	3700 ft (1128 m)
QR 540 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	211 lbs/kft (314 kg/km)	260 lbs/kft (387 kg/km)	3700 ft (1128 m)

Indoor/Riser Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 540 JCAR 	has a flame-retardant polyethylene jacket that meets NEC 820 riser rating	106 lbs/kft (158 kg/km)	135 lbs/kft (201 kg/km)	3700 ft (1128 m)

**Longer (and shorter) lengths are available*

For more information, call Customer Service at 800.982.1708 or 828.324.2200 • Fax 828.328.3400 • custserv@commscope.com

QR® 540 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.124	3.15
Nominal Diameter Over Dielectric	0.514	13.05
Nominal Diameter Over Outer Conductor	0.540	13.72
Nominal Outer Conductor Thickness	0.0135	0.343
Nominal Diameter Over Jacket	0.610	15.49
Nominal Jacket Wall Thickness	0.035	0.89
Messenger Version		
Diameter of Steel Messenger	0.109	2.77
Dual Jacket Version		
Nominal Jacket Wall Thickness of Outer Jacket	0.043	1.09
Nominal Diameter Over Outer Jacket	0.700	17.78
Armored Versions		
Nominal Diameter Over Corrugated Armor	0.686	17.42
Nominal Armor Thickness	0.010	0.25
Nominal Diameter Over Outer Jacket	0.881	22.38
Nominal Thickness of Outer Jacket	0.046	1.17

Mechanical Characteristics

Minimum Bending Radius:			
(Jacketed)		4.0 in.	10.2 cm
(Armored)		5.0 in.	12.7 cm
Maximum Pulling Tension		220 lbs.	100 kg_f
Minimum Breaking Strength of Messenger	(109)	1,800 lbs.	816 kg_f

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	88%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	1.02 ohms/1000 ft.	3.34 ohms/km
Outer Conductor	0.59 ohms/1000 ft.	1.94 ohms/km
Loop	1.61 ohms/1000 ft.	5.28 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	Maximum	(dB/100 m) Nominal	Maximum
5	0.13	0.14	0.43	0.46
55	0.45	0.48	1.48	1.56
83	0.55	0.58	1.80	1.90
211	0.91	0.95	2.99	3.12
250	0.99	1.03	3.25	3.38
300	1.08	1.13	3.54	3.71
350	1.17	1.23	3.84	4.04
400	1.26	1.32	4.13	4.33
450	1.35	1.40	4.43	4.59
500	1.41	1.49	4.63	4.89
550	1.51	1.56	4.95	5.12
600	1.59	1.64	5.22	5.38
750	1.80	1.85	5.91	6.07
865	1.90	2.00	6.23	6.56
1000	2.10	2.17	6.89	7.12

ACT® Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

QR® 715 Series Cables
Product Descriptions

CommScope's patented QR® coaxial cable was developed to meet the increasing demands of tomorrow's broadband networks. QR has the highest reliability and flexibility of any Trunk and Distribution coaxial cable, low RF attenuation and an unprecedented 10 year warranty.

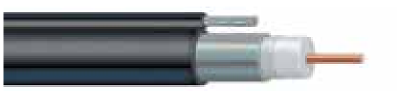
All QR cable products offer tough polyethylene jackets and a standardized, environmentally sealed connector interface engineered for reliability and craft friendliness.

QR 715 is optimized for use in broadband distribution plants. QR 715 offers lower attenuation than larger traditional products, with unmatched flexibility, reliability and cost effectiveness.

Standard QR Construction

A precision aluminum strip is formed and continuously RF welded around a high compression micro-cellular foam dielectric core, minimizing RF egress and ingress, and the rigidity common in traditional trunk and distribution coaxial products. The shield is fully bonded to the dielectric core, as is the copper clad aluminum center conductor. A tough polyethylene jacket is applied standard, which enhances cable reliability and allows QR's unique connector technology to form an environmental seal.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 715 JCA 	offers all of QR's standard construction features	145 lbs/kft (216 kg/km)	205 lbs/kft (305 kg/km)	3000 ft (914 m)
QR 715 JCAM188 	has an integrated figure 8 stranded galvanized steel messenger for self-supporting applications	232 lbs/kft (342 kg/km)	301 lbs/kft (448 kg/km)	3000 ft (914 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 715 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	145 lbs/kft (216 kg/km)	383 lbs/kft (570 kg/km)	3000 ft (914 m)
QR 715 2J(MA) CASS 	offers dual polyethylene jackets separated with tough polyester tape for greater cut-through resistance	182 lbs/kft (271 kg/km)	232 lbs/kft (345 kg/km)	3000 ft (914 m)
QR 715 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	289 lbs/kft (430 kg/km)	359 lbs/kft (534 kg/km)	3000 ft (914 m)

Longer (and shorter) lengths are available

QR® 715 Series Cables
Product Specifications

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.166	4.22
Nominal Diameter Over Dielectric	0.686	17.42
Nominal Diameter Over Outer Conductor	0.715	18.16
Nominal Outer Conductor Thickness	0.0145	0.37
Nominal Diameter Over Jacket	0.785	19.94
Nominal Jacket Wall Thickness	0.035	0.89
Messenger Version		
Diameter of Steel Messenger	0.188	4.78
Dual Jacket Version		
Nominal Jacket Wall Thickness of Outer Jacket	0.046	1.17
Nominal Diameter Over Outer Jacket	0.881	22.38
Armored Versions		
Nominal Diameter Over Corrugated Armor	0.855	21.71
Nominal Armor Thickness	0.008	0.20
Nominal Diameter Over Outer Jacket	0.935	23.75
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:		
(Jacketed)	5.0 in.	12.7 cm
(Armored)	7.5 in.	19.1 cm
Maximum Pulling Tension	340 lbs.	154 kg_f
Minimum Breaking Strength (188) of Messenger	3,900 lbs.	1,769 kg_f

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	88%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.579 ohms/1000 ft.	1.90 ohms/km
Outer Conductor	0.418 ohms/1000 ft.	1.37 ohms/km
Loop	0.997 ohms/1000 ft.	3.27 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.09	0.11	0.30	0.36
55	0.35	0.37	1.15	1.21
83	0.43	0.45	1.41	1.48
211	0.71	0.74	2.33	2.43
250	0.77	0.81	2.53	2.66
300	0.83	0.89	2.73	2.92
350	0.91	0.97	2.99	3.18
400	0.98	1.05	3.22	3.44
450	1.04	1.12	3.41	3.67
500	1.10	1.19	3.61	3.90
550	1.18	1.25	3.87	4.10
600	1.22	1.31	4.01	4.30
750	1.36	1.49	4.46	4.89
865	1.48	1.62	4.86	5.31
1000	1.59	1.75	5.22	5.74

Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

QR® 860 Series Cables
Product Descriptions

COMMSCOPE®

CommScope's patented QR® coaxial cable was developed to meet the increasing demands of tomorrow's broadband networks. QR has the highest reliability and flexibility of any Trunk and Distribution coaxial cable, low RF attenuation and an unprecedented 10 year warranty.

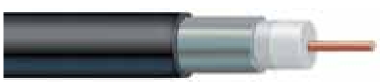
All QR cable products offer tough polyethylene jackets and a standardized, environmentally sealed connector interface engineered for reliability and craft friendliness.

QR 860 is optimized for use in broadband trunk & distribution plants. QR 860 offers lower attenuation than larger traditional products, with unmatched flexibility, reliability and cost effectiveness.

Standard QR Construction

A precision aluminum strip is formed and continuously RF welded around a high compression micro-cellular foam dielectric core, minimizing RF egress and ingress, and the rigidity common in traditional trunk and distribution coaxial products. The shield is fully bonded to the dielectric core, as is the copper clad aluminum center conductor. A tough polyethylene jacket is applied standard, which enhances cable reliability and allows QR's unique connector technology to form an environmental seal.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 860 JCA 	offers all of QR's standard construction features	215 lbs/kft (320 kg/km)	292 lbs/kft (435 kg/km)	2700 ft (823 m)
QR 860 JCAM188 	has an integrated figure 8 galvanized stranded steel messenger for self-supporting applications	308 lbs/kft (458 kg/km)	403 lbs/kft (600 kg/km)	2700 ft (823 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length*
QR 860 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	215 lbs/kft (320 kg/km)	292 lbs/kft (435 kg/km)	2700 ft (823 m)
QR 860 2J(MA) CASS 	offers dual polyethylene jackets separated with tough polyester tape for greater cut-through resistance	245 lbs/kft (365 kg/km)	304 lbs/kft (452 kg/km)	2700 ft (823 m)
QR 860 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	393 lbs/kft (585 kg/km)	488 lbs/kft (726 kg/km)	2700 ft (823 m)

**Longer (and shorter) lengths are available*

QR® 860 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.203	5.16
Nominal Diameter Over Dielectric	0.828	21.03
Nominal Diameter Over Outer Conductor	0.860	21.84
Nominal Outer Conductor Thickness	0.016	0.41
Nominal Diameter Over Jacket	0.960	24.38
Nominal Jacket Wall Thickness	0.050	1.27
Nominal Jacket Wall Thickness (JCASS)	0.045	1.14
Messenger Version		
Diameter of Steel Messenger	0.188	4.78
Dual Jacket Version		
Nominal Jacket Wall Thickness of Outer Jacket	0.031	0.79
Nominal Diameter Over Outer Jacket	1.026	26.06
Armored Versions		
Nominal Diameter Over Corrugated Armor	1.030	26.16
Nominal Armor Thickness	0.010	0.25
Nominal Diameter Over Outer Jacket	1.110	28.19
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:			
(Jacketed)		7.0 in.	17.8 cm
(Armored)		9.5 in.	24.1 cm
Maximum Pulling Tension		450 lbs.	204 kg_f
Minimum Breaking Strength of Messenger	(188)	3,900 lbs.	1,769 kg_f

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	88%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.406 ohms/1000 ft.	1.33 ohms/km
Outer Conductor	0.318 ohms/1000 ft.	1.04 ohms/km
Loop	0.724 ohms/1000 ft.	2.37 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.08	0.09	0.26	0.30
55	0.29	0.32	0.95	1.05
83	0.35	0.40	1.15	1.31
211	0.59	0.64	1.94	2.10
250	0.64	0.70	2.10	2.30
300	0.71	0.76	2.33	2.49
350	0.76	0.83	2.49	2.72
400	0.83	0.88	2.72	2.89
450	0.88	0.95	2.89	3.12
500	0.93	1.00	3.05	3.28
550	0.99	1.06	3.25	3.48
600	1.04	1.10	3.41	3.61
750	1.17	1.24	3.84	4.07
865	1.25	1.33	4.10	4.36
1000	1.38	1.44	4.53	4.72

Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

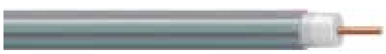
P3® 500 Series Cables
Product Descriptions

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

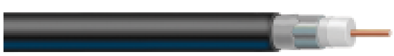
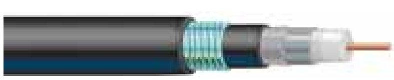
P3 500 is optimized for use in broadband feeder plants. Its small size, low attenuation and inherent strength has made it an industry standard.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 500 CA 	offers all of P3's standard construction features (without a jacket)	72 lbs/kft (107 kg/km)	97 lbs/kft (144 kg/km)	2400 ft (732 m)
P3 500 JCA 	offers all of P3's standard construction features	95 lbs/kft (141 kg/km)	120 lbs/kft (179 kg/km)	2400 ft (732 m)
P3 500 JCAM 109 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	134 lbs/kft (199 kg/km)	176 lbs/kft (262 kg/km)	2400 ft (732 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 500 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	98 lbs/kft (146 kg/km)	123 lbs/kft (183 kg/km)	2400 ft (732 m)
P3 500 CableGuard® 	offers an outer jacket with compartmentalized cells, providing excellent cut-through and crush resistance	137 lbs/kft (204 kg/km)	181 lbs/kft (269 kg/km)	2400 ft (732 m)
P3 500 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated, chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	210 lbs/kft (313 kg/km)	254 lbs/kft (378 kg/km)	2400 ft (732 m)

Indoor/Riser Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 500 JCAR 	has a flame-retardant polyethylene jacket that meets NEC's 820 riser rating	114 lbs/kft (170 kg/km)	138 lbs/kft (205 kg/km)	2400 ft (732 m)

P3® 500 Series Cables
Product Specifications

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.109	2.77
Nominal Diameter Over Dielectric	0.450	11.43
Nominal Diameter Over Outer Conductor	0.500	12.70
Nominal Outer Conductor Thickness	0.024	0.61
Jacket Versions		
Nominal Diameter Over Jacket	0.570	14.48
Nominal Jacket Wall Thickness	0.030	0.76
Nominal Diameter Over Flooded Jacket (JCASS)	0.570	14.48
Nominal Diameter Over CableGuard Jacket	0.750	19.07
Messenger Version		
Diameter of Steel Messenger	0.109	2.77
Armored Versions		
Nominal Diameter Over Corrugated Armor	0.640	16.26
Nominal Armor Thickness	0.008	0.20
Nominal Diameter Over Outer Jacket	0.720	18.29
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:	Standard		Bonded	
(No Jacket)	6.5 in.	16.5 cm	4.0 in.	10.2 cm
(Jacketed)	6.0 in.	15.2 cm	3.5 in.	8.9 cm
(Armored)	8.5 in.	21.6 cm	6.0 in.	15.2 cm
Maximum Pulling Tension	300 lbs.		$136\ kg_f$	
Minimum Breaking Strength (109) of Messenger	1,800 lbs.		$816\ kg_f$	

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	87%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	1.35 ohms/1000 ft.	4.43 ohms/km
Outer Conductor	0.37 ohms/1000 ft.	1.21 ohms/km
Loop	1.72 ohms/1000 ft.	5.64 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.16	0.16	0.52	0.52
55	0.52	0.54	1.71	1.77
83	0.64	0.66	2.10	2.17
211	1.06	1.09	3.48	3.58
250	1.15	1.20	3.77	3.94
300	1.26	1.31	4.13	4.30
350	1.36	1.43	4.46	4.69
400	1.47	1.53	4.82	5.02
450	1.56	1.63	5.12	5.35
500	1.65	1.73	5.41	5.67
550	1.75	1.82	5.74	5.97
600	1.83	1.91	6.00	6.27
750	2.04	2.16	6.69	7.09
865	2.20	2.34	7.22	7.68
1000	2.41	2.52	7.91	8.27

Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

P3® 565 Series Cables
Product Descriptions

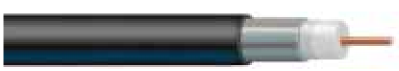
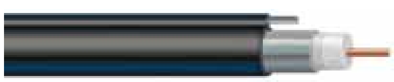
COMMSCOPE®

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

P3 565 is optimized for use in broadband feeder plants. A thinner aluminum shield contributes to lower cable weight, while a slightly larger diameter impacts cable attenuation.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 565 JCA 	offers all of P3's triple bond construction features	112 lbs/kft (167 kg/km)	153 lbs/kft (228 kg/km)	2450 ft (747 m)
P3 565 JCAM 109 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	144 lbs/kft (214 kg/km)	205 lbs/kft (305 kg/km)	2450 ft (747 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 565 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	116 lbs/kft (173 kg/km)	157 lbs/kft (234 kg/km)	2450 ft (747 m)

P3® 565 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.129	3.28
Nominal Diameter Over Dielectric	0.519	13.20
Nominal Diameter Over Outer Conductor	0.565	14.35
Nominal Outer Conductor Thickness	0.023	0.58
Nominal Diameter Over Jacket	0.625	15.86
Nominal Jacket Wall Thickness	0.030	0.76
Nominal Diameter Over Flooded Jacket (JCASS)	0.635	16.13
Messengered Versions		
Diameter of Steel Messenger	0.109	2.77

Mechanical Characteristics

	Bonded	
Minimum Bending Radius:		
(Jacketed)	5.0 in.	12.7 cm
Maximum Pulling Tension	350 lbs.	159 kg_f
Minimum Breaking Strength (109) of Messenger	1,800 lbs.	816 kg_f

Electrical Characteristics

Capacitance	15.3 ± 1.0 pf/ft	50 ± 3.0nf/km
Impedance	75 ohms	
Velocity of Propagation	89%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.96 ohms/1000 ft.	3.15 ohms/km
Outer Conductor	0.34 ohms/1000 ft.	1.12 ohms/km
Loop	1.30 ohms/1000 ft.	4.26 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.13	0.14	0.43	0.46
55	0.46	0.47	1.51	1.54
83	0.56	0.58	1.84	1.90
211	0.91	0.95	2.99	3.12
250	0.99	1.03	3.25	3.38
300	1.09	1.13	3.58	3.71
350	1.18	1.23	3.87	4.04
400	1.27	1.32	4.17	4.33
450	1.35	1.40	4.43	4.59
500	1.43	1.49	4.69	4.89
550	1.50	1.56	4.92	5.12
600	1.58	1.64	5.18	5.38
750	1.78	1.85	5.84	6.07
865	1.93	2.00	6.33	6.56
1000	2.08	2.17	6.82	7.12

ACT Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

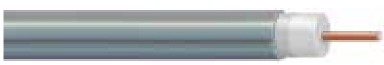
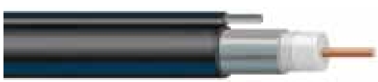
P3® 625 Series Cables
Product Descriptions

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

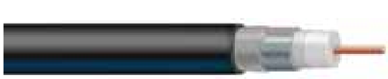
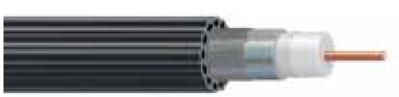
P3 625 is optimized for use in broadband feeder plants. Its small size, low attenuation and inherent strength has made it an industry standard.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 625 CA 	offers all of P3's standard construction features (without a jacket)	116 lbs/kft (173 kg/km)	158 lbs/kft (243 kg/km)	2400 ft (732 m)
P3 625 JCA 	offers all of P3's standard construction features	141 lbs/kft (210 kg/km)	183 lbs/kft (272 kg/km)	2400 ft (732 m)
P3 625 JCAM 109 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	180 lbs/kft (268 kg/km)	256 lbs/ft (381 kg/km)	2400 ft (732 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 625 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	145 lbs/kft (216 kg/km)	187 lbs/kft (278 kg/km)	2400 ft (732 m)
P3 625 CableGuard® 	offers an outer jacket with compartmentalized cells, providing excellent cut-through and crush resistance	190 lbs/kft (283 kg/km)	265 lbs/kft (394 kg/km)	2400 ft (732 m)
P3 625 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated, chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	281 lbs/kft (417 kg/km)	357 lbs/kft (531 kg/km)	2400 ft (732 m)

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P3® 625 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.137	3.48
Nominal Diameter Over Dielectric	0.565	14.35
Nominal Diameter Over Outer Conductor	0.625	15.88
Nominal Outer Conductor Thickness	0.030	0.76
Jacket Versions		
Nominal Diameter Over Jacket	0.685	17.40
Nominal Jacket Wall Thickness	0.030	0.76
Nominal Diameter Over Flooded Jacket (JCASS)	0.695	17.65
Nominal Diameter Over CableGuard Jacket	0.875	22.24
Messenger Version		
Diameter of Steel Messenger	0.109	2.77
Armored Versions		
Nominal Diameter Over Corrugated Armor	0.770	19.56
Nominal Armor Thickness	0.008	0.20
Nominal Diameter Over Outer Jacket	0.850	21.59
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:	Standard		Bonded	
(No Jacket)	7.5 in.	19.1 cm	5.0 in.	12.7 cm
(Jacketed)	7.0 in.	17.8 cm	4.5 in.	11.4 cm
(Armored)	9.5 in.	24.1 cm	7.0 in.	17.8 cm
Maximum Pulling Tension	475 lbs.		216 kg_f	
Minimum Breaking Strength (109) of Messenger	1,800 lbs.		816 kg_f	

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50 ±3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	87%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.84 ohms/1000 ft.	2.76 ohms/km
Outer Conductor	0.26 ohms/1000 ft.	0.85 ohms/km
Loop	1.10 ohms/1000 ft.	3.61 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	Maximum	(dB/100 m) Nominal	Maximum
5	0.12	0.13	0.39	0.43
55	0.42	0.45	1.38	1.48
83	0.51	0.56	1.67	1.84
211	0.85	0.92	2.79	3.02
250	0.92	1.00	3.02	3.28
300	1.02	1.08	3.35	3.54
350	1.09	1.18	3.58	3.87
400	1.18	1.27	3.87	4.17
450	1.26	1.35	4.13	4.43
500	1.32	1.43	4.33	4.69
550	1.41	1.50	4.63	4.92
600	1.48	1.58	4.86	5.18
750	1.66	1.78	5.45	5.84
865	1.77	1.93	5.81	6.33
1000	1.95	2.07	6.40	6.79

ACT® Advanced Coring Technology

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

P3® 700 Series Cables
Product Descriptions

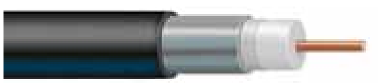
COMMSCOPE®

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

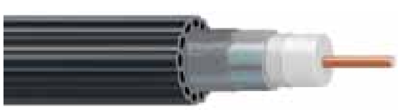
P3 700 is optimized for use in broadband distribution plants. A thinner aluminum shield contributes to lower cable weight, while a slightly larger diameter impacts cable attenuation.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 700 JCA 	offers all of P3's triple bond construction features	160 lbs/kft (238 kg/km)	201 lbs/kft (299 kg/km)	2500 ft (762 m)
P3 700 JCAM 188 	has an integrated figure 8 galvanized stranded steel messenger for self-supporting applications	248 lbs/kft (369 kg/km)	300 lbs/kft (447 kg/km)	2500 ft (762 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 700 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	165 lbs/kft (246 kg/km)	206 lbs/kft (307 kg/km)	2500 ft (762 m)
P3 700 CableGuard® 	offers an outer jacket with compartmentalized cells, providing excellent cut-through and crush resistance	205 lbs/kft (305 kg/km)	270 lbs/kft (402 kg/km)	2500 ft (762 m)

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P3® 700 Series Cables

Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.163	4.14
Nominal Diameter Over Dielectric	0.653	16.59
Nominal Diameter Over Outer Conductor	0.703	17.86
Nominal Outer Conductor Thickness	0.025	0.63
Nominal Diameter Over Jacket	0.765	19.43
Nominal Jacket Wall Thickness	0.031	0.79
Nominal Diameter Over Flooded Jacket (JCASS)	0.775	19.69
Nominal Diameter Over CableGuard	0.985	25.02
Messenger Version		
Diameter of Steel Messenger	0.188 (stranded)	4.78 (stranded)

Mechanical Characteristics

	Bonded	
Minimum Bending Radius: (Jacketed)	6.5 in.	16.5 cm
Maximum Pulling Tension	500 lbs.	227 kg_f
Minimum Breaking Strength (188) of Messenger	3,900 lbs.	1,769 kg_f

Electrical Characteristics

Capacitance	15.3±1.0 pf/ft	50±3.0 nf/km
Impedance	75±2 ohms	
Velocity of Propagation	89%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.59 ohms/1000 ft.	1.93 ohms/km
Outer Conductor	0.25 ohms/1000 ft.	0.82 ohms/km
Loop	0.84 ohms/1000 ft.	2.75 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	Maximum	(dB/100 m) Nominal	Maximum
5	0.11	0.11	0.36	0.36
55	0.35	0.36	1.15	1.18
83	0.44	0.45	1.44	1.48
211	0.72	0.73	2.36	2.40
250	0.79	0.81	2.59	2.66
300	0.87	0.90	2.85	2.95
350	0.95	0.98	3.12	3.22
400	1.02	1.05	3.35	3.45
450	1.08	1.12	3.54	3.67
500	1.15	1.19	3.77	3.90
550	1.21	1.25	3.97	4.10
600	1.27	1.31	4.17	4.30
750	1.44	1.49	4.72	4.89
865	1.57	1.62	5.15	5.32
1000	1.69	1.75	5.54	5.74

ACT Advanced Coring Technology

Setting a New Standard in Cable Technology!

A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

P3® 750 Series Cables
Product Descriptions

COMMSCOPE®

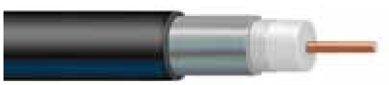
CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

P3 750 is optimized for use in broadband distribution plants. Its low attenuation and inherent strength has made it an industry standard.

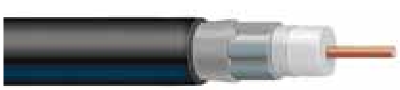
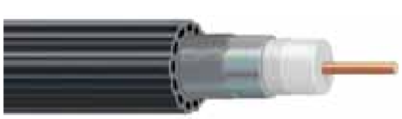
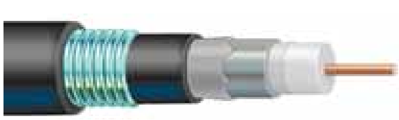
Standard P3 Construction

A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 750 CA 	offers all of P3's standard construction features (without a jacket)	164 lbs/kft (244 kg/km)	224 lbs/kft (333 kg/km)	2500 ft (762 m)
P3 750 JCA 	offers all of P3's standard construction features	199 lbs/kft (296 kg/km)	260 lbs/kft (387 kg/km)	2500 ft (762 m)
P3 750 JCAM 188 	has an integrated figure 8 galvanized stranded steel messenger for self-supporting applications	292 lbs/kft (435 kg/km)	375 lbs/kft (558 kg/km)	2500 ft (762 m)
P3 750 JCAM 250 (also available)		345 lbs/kft (513 kg/km)	407 lbs/kft (606 kg/km)	2500 ft (762 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 750 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	204 lbs/kft (304 kg/km)	268 lbs/kft (399 kg/km)	2500 ft (762 m)
P3 750 CableGuard® 	offers an outer jacket with compartmentalized cells, providing excellent cut-through and crush resistance	256 lbs/kft (381 kg/km)	326 lbs/kft (485 kg/km)	2500 ft (762 m)
P3 750 JACASS 	features CommScope's Migra-Heal® flooding compound a bonded, corrugated, chrome-plated steel armor and dual polyethylene jackets for ultimate toughness	362 lbs/kft (539 kg/km)	445 lbs/kft (662 kg/km)	2500 ft (762 m)

P3® 750 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.167	4.24
Nominal Diameter Over Dielectric	0.682	17.32
Nominal Diameter Over Outer Conductor	0.750	19.05
Nominal Outer Conductor Thickness	0.034	0.86
Jacket Versions		
Nominal Diameter Over Jacket	0.820	20.83
Nominal Jacket Wall Thickness	0.035	0.89
Nominal Diameter Over Flooded Jacket (JCASS)	0.830	21.08
Nominal Diameter Over CableGuard Jacket	1.055	26.80
Messenger Version		
Diameter of Steel Messenger	0.188 0.250 (stranded)	4.78 6.35 (stranded)
Armored Versions		
Nominal Diameter Over Corrugated Armor	0.900	22.86
Nominal Armor Thickness	0.008	0.20
Nominal Diameter Over Outer Jacket	0.980	24.89
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:	Standard		Bonded	
(No Jacket)	9.0 in.	22.9 cm	7.0 in.	17.8 cm
(Jacketed)	8.0 in.	20.3 cm	6.0 in.	15.2 cm
(Armored)	10.5 in.	26.7 cm	9.0 in.	22.9 cm
Maximum Pulling Tension		675 lbs.		306 kg_f
Minimum Breaking Strength of Messenger (188)		3,900 lbs.		1,769 kg_f
Minimum Breaking Strength of Messenger (250)		6,650 lbs.		3,016 kg_f

Electrical Characteristics

Capacitance	15.3 ± 1.0 pf/ft	50 ± 3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	87%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.57 ohms/1000 ft.	1.87 ohms/km
Outer Conductor	0.19 ohms/1000 ft.	0.62 ohms/km
Loop	0.76 ohms/1000 ft.	2.49 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.10	0.11	0.33	0.36
55	0.35	0.37	1.15	1.21
83	0.42	0.46	1.38	1.51
211	0.71	0.74	2.33	2.43
250	0.77	0.81	2.53	2.66
300	0.85	0.89	2.79	2.92
350	0.91	0.97	2.99	3.18
400	0.99	1.05	3.25	3.44
450	1.06	1.12	3.48	3.67
500	1.11	1.18	3.64	3.87
550	1.19	1.24	3.90	4.07
600	1.23	1.31	4.04	4.30
750	1.38	1.48	4.53	4.86
865	1.49	1.61	4.89	5.28
1000	1.62	1.74	5.32	5.71

ACT Advanced Coring Technology®

Setting a New Standard in Cable Technology!
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

P3® 840 Series Cables
Product Descriptions

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

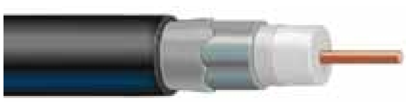
P3 840 has been designed for use in broadband trunk & distribution plants. A thinner aluminum shield contributes to lower cable weight, while a slightly larger diameter impacts cable attenuation.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 840 JCA 	offers all of P3's triple bond construction features	225 lbs/kft (335 kg/km)	306 lbs/kft (455 kg/km)	2450 ft (747 m)
P3 840 JCAM 188 	has an integrated figure 8 galvanized stranded steel messenger for self-supporting applications	301 lbs/kft (448 kg/km)	408 lbs/kft (607 kg/km)	2450 ft (747 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 840 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	292 lbs/kft (435 kg/km)	314 lbs/kft (467 kg/km)	2450 ft (747 m)

P3® 840 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.194	4.93
Nominal Diameter Over Dielectric	0.780	19.81
Nominal Diameter Over Outer Conductor	0.840	21.34
Nominal Outer Conductor Thickness	0.030	0.76
Nominal Diameter Over Jacket	0.910	23.11
Nominal Jacket Wall Thickness	0.035	0.89
Nominal Diameter Over Flooded Jacket (JCASS)	0.920	23.37
Messenger Version		
Diameter of Steel Messenger	0.250 (stranded)	6.35 (stranded)

Mechanical Characteristics

		Bonded	
Minimum Bending Radius:			
(Jacketed)		7.5 in.	19.0 cm
Maximum Pulling Tension		700 lbs.	318 kg_f
Minimum Breaking Strength of Messenger	(250)	6,650 lbs.	3,016 kg_f

Electrical Characteristics

Capacitance	15.3 ± 1.0 pf/ft	50 ± 3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	89%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.43 ohms/1000 ft.	1.41 ohms/km
Outer Conductor	0.17 ohms/1000 ft.	0.56 ohms/km
Loop	0.60 ohms/1000 ft.	1.97 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.09	0.09	0.30	0.30
55	0.31	0.32	1.02	1.05
83	0.38	0.40	1.25	1.31
211	0.63	0.65	2.07	2.13
250	0.68	0.70	2.23	2.30
300	0.75	0.77	2.46	2.53
350	0.82	0.84	2.69	2.76
400	0.88	0.91	2.89	2.99
450	0.94	0.97	3.08	3.18
500	1.00	1.03	3.28	3.38
550	1.05	1.09	3.45	3.58
600	1.11	1.14	3.64	3.74
750	1.26	1.30	4.13	4.27
865	1.39	1.42	4.56	4.66
1000	1.49	1.53	4.89	5.02

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A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

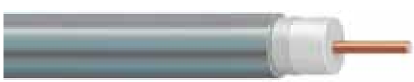
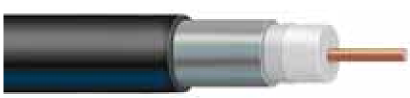
P3® 875 Series Cables
Product Descriptions

CommScope's P3® product line is the industry standard by which all coaxial trunk and distribution cables are measured. P3 has been proven robust and reliable by years of successful installations.

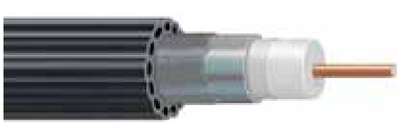
P3 875 is optimized for use in broadband trunk & distribution plants. Its ultra low attenuation and inherent strength has made it an industry standard.

Standard P3 Construction
A high precision aluminum outer conductor surrounds a high compression, micro-cellular foam dielectric core. The core contains a fully bonded copper clad center conductor.

Aerial Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 875 CA 	offers all of P3's standard construction features (without a jacket)	216 lbs/kft (321 kg/km)	295 lbs/kft (439 kg/km)	2500 ft (762 m)
P3 875 JCA 	offers all of P3's standard construction features	257 lbs/kft (382 kg/km)	336 lbs/kft (500 kg/km)	2500 ft (762 m)

Underground Construction

Catalog Number	Description	Cable Weight	Shipping Weight	Standard Length
P3 875 JCASS 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	263 lbs/kft (391 kg/km)	347 lbs/kft (517 kg/km)	2500 ft (762 m)
P3 875 CableGuard® 	offers an outer jacket with compartmentalized cells, providing excellent cut-through and crush resistance	308 lbs/kft (458 kg/km)	421 lbs/kft (627 kg/km)	2500 ft (762 m)
P3 875 JACASS 	features CommScope's Migra-Heal® flooding compound, a bonded, corrugated chrome-plated armor and dual polyethylene jackets for ultimate toughness	432 lbs/kft (643 kg/km)	540 lbs/kft (804 kg/km)	2500 ft (762 m)

For more information, call Customer Service at 800.982.1708 or 828.324.2200 • Fax 828.328.3400 • custserv@commscope.com

P3® 875 Series Cables

Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.194	4.93
Nominal Diameter Over Dielectric	0.797	20.24
Nominal Diameter Over Outer Conductor	0.875	22.23
Nominal Outer Conductor Thickness	0.039	0.99
Jacket Versions		
Nominal Diameter Over Jacket	0.945	24.00
Nominal Jacket Wall Thickness	0.035	0.90
Nominal Diameter Over Flooded Jacket (JCASS)	0.955	24.26
Nominal Diameter Over CableGuard Jacket	1.200	30.48
Armored Versions		
Nominal Diameter Over Corrugated Armor	1.030	25.83
Nominal Armor Thickness	0.008	0.20
Nominal Diameter Over Outer Jacket	1.110	27.86
Nominal Thickness of Outer Jacket	0.040	1.02

Mechanical Characteristics

Minimum Bending Radius:	Standard		Bonded	
(No Jacket)	10.0 in.	25.4 cm	8.5 in.	17.8 cm
(Jacketed)	9.0 in.	22.9 cm	7.0 in.	17.8 cm
(Armored)	11.5 in.	29.2 cm	10.0 in.	25.4 cm
Maximum Pulling Tension			875 lbs.	397 kg_f
Minimum Breaking Strength of Messenger	(250)		6,650 lbs.	3,016 kg_f

Electrical Characteristics

Capacitance	15.3 ±1.0 pf/ft	50±3.0 nf/km
Impedance	75±2 ohms	
Velocity of Propagation	87%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.42 ohms/1000 ft.	1.38 ohms/km
Outer Conductor	0.13 ohms/1000 ft.	0.43 ohms/km
Loop	0.55 ohms/1000 ft.	1.80 ohms/km

Attenuation [@ 68° F. (20° C.)]

Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.09	0.10	0.30	0.31
55	0.29	0.31	0.95	1.02
83	0.36	0.38	1.18	1.25
211	0.61	0.66	2.00	2.17
250	0.67	0.72	2.20	2.36
300	0.73	0.78	2.40	2.56
350	0.79	0.84	2.59	2.76
400	0.86	0.91	2.82	2.99
450	0.91	0.97	2.99	3.18
500	0.96	1.03	3.15	3.38
550	1.03	1.08	3.38	3.54
600	1.08	1.14	3.54	3.74
750	1.21	1.29	3.97	4.23
865	1.30	1.41	4.27	4.63
1000	1.42	1.53	4.67	5.02

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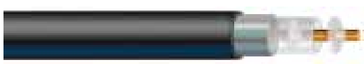
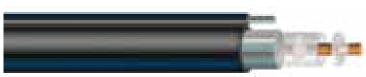
A clean center conductor after coring is a feature of this product and should be considered normal.

Specifications are subject to change without notice.

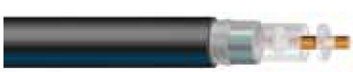
MC²® 500 Series Cables
Product Descriptions

CommScope offers MC² disc-and-air dielectric coaxial distribution cable in addition to our traditional foam dielectric lines. MC² offers the lowest available attenuation in the smallest diameter cable, thereby maximizing conduit efficiency and/or minimizing HFC plant active requirements. Fully bonded performance and a variety of jacket configurations make MC² a flexible alternative. Like all CommScope distribution products, MC² 500, 650 and 750 are available preinstalled in ConQuest Conduit.

Aerial Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO500CB 	offers all of MC²'s standard construction features (without a jacket)	75 lbs/kft (116 kg/km)	97 lbs/kft (144 kg/km)	4600 ft (1402 m)
MO500CU 	offers all of MC²'s standard construction features	106 lbs/kft (158 kg/km)	129 lbs/kft (192 kg/km)	4600 ft (1402 m)
MO500CMA 	has an integrated figure 8 galvanized solid steel messenger for self-supporting applications	140 lbs/kft (220 kg/km)	185 lbs/kft (275 kg/km)	4600 ft (1402 m)

Underground Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO500CJ 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	111 lbs/kft (165 kg/km)	134 lbs/kft (199 kg/km)	4600 ft (1402 m)

MC² 500 Series Cables
Product Specifications

COMMSCOPE

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.123	3.1
Nominal Diameter Over Dielectric	0.471	11.96
Nominal Diameter Over Outer Conductor	0.510	12.95
Nominal Outer Conductor Thickness	0.019	0.50
Jacket Versions		
Nominal Diameter Over Jacket	0.590	14.98
Nominal Wall Thickness	0.040	1.02
Nominal Diameter Over Flooded Jacket (CJ)	0.605	15.37
Messenger Version		
Diameter of Steel Messenger	0.109	2.77

Mechanical Characteristics

Minimum Bending Radius:		
(No Jacket)	6.0 in.	15.2 cm
(Jacketed)	6.0 in.	15.2 cm
(Armored)	6.0 in.	15.2 cm
Maximum Pulling Tension	270 lbs.	123 kg
Minimum Breaking Strength of Messenger (109)	1,800 lbs.	816 kg

Electrical Characteristics

Capacitance	14.9 pF/ft	48.9 pF/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	93%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	1.09 ohms/1000 ft.	3.58 ohms/km
Outer Conductor	0.46 ohms/1000 ft.	1.51 ohms/km
Loop	1.55 ohms/1000 ft.	5.04 ohms/km

Attenuation [@ 68° F. (20° C.)]

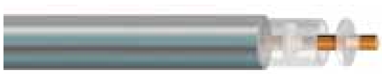
Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.14	0.15	0.46	0.48
55	0.47	0.49	1.54	1.62
83	0.58	0.61	1.90	2.00
250	1.01	1.06	3.31	3.48
300	1.12	1.18	3.67	3.86
350	1.21	1.27	3.97	4.17
400	1.29	1.35	4.23	4.44
450	1.37	1.44	4.495	4.72
500	1.45	1.52	4.76	5.00
550	1.52	1.60	4.99	5.24
600	1.60	1.68	5.25	5.51
750	1.79	1.88	5.87	6.17
865	1.95	2.05	6.40	6.72
1000	2.11	2.22	6.92	7.27

Specifications are subject to change without notice.

MC²® 650 Series Cables
Product Descriptions

CommScope offers MC² disc-and-air dielectric coaxial distribution cable in addition to our traditional foam dielectric lines. MC² offers the lowest available attenuation in the smallest diameter cable, thereby maximizing conduit efficiency and/or minimizing HFC plant active requirements. Fully bonded performance and a variety of jacket configurations make MC² a flexible alternative. Like all CommScope distribution products, MC² 500, 650 and 750 are available preinstalled in ConQuest Conduit.

Aerial Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO650CB 	offers all of MC²'s standard construction features (without a jacket)	112 lbs/kft (167 kg/km)	164 lbs/kft (244 kg/km)	4000 ft (1219 m)
MO650CU 	offers all of MC²'s standard construction features	147 lbs/kft (219 kg/km)	199 lbs/kft (296 kg/km)	4000 ft (1219 m)

Underground Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO650CJ 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	153 lbs/kft (228 kg/km)	205 lbs/kft (305 kg/km)	4000 ft (1219 m)

MC²® 650 Series Cables
Product Specifications

COMMSCOPE®

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.156	3.96
Nominal Diameter Over Dielectric	0.603	15.32
Nominal Diameter Over Outer Conductor	0.642	16.31
Nominal Outer Conductor Thickness	0.0195	0.495
Jacket Versions		
Nominal Diameter Over Jacket	0.722	18.34
Nominal Jacket Wall Thickness	0.040	1.02
Nominal Diameter Over Flooded Jacket (CJ)	0.735	18.70
Messenger Version		
Diameter of Steel Messenger	0.188	4.78

Mechanical Characteristics

Minimum Bending Radius:		
(No Jacket)	7.0 in.	17.8 cm
(Jacketed)	7.0 in.	17.8 cm
(Armored)	7.0 in.	17.8 cm
Maximum Pulling Tension	360 lbs.	164 kg
Minimum Breaking Strength of Messenger (188)	3990 lbs.	1814 kg

Electrical Characteristics

Capacitance	14.9 pF/ft ± 1.0	48.9 pF/km ± 3.0
Impedance	75 ± 2 ohms	
Velocity of Propagation	93%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.66 ohms/1000 ft.	2.17 ohms/km
Outer Conductor	0.34 ohms/1000 ft.	1.11 ohms/km
Loop	1.00 ohms/1000 ft.	3.28 ohms/km

Attenuation [@ 68° F. (20° C.)]

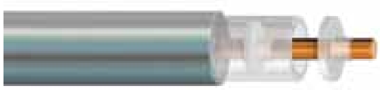
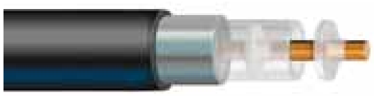
Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.11	0.12	0.36	0.38
55	0.37	0.39	1.21	1.27
83	0.46	0.48	1.51	1.58
211	0.74	0.78	2.43	2.55
250	0.81	0.85	2.66	2.79
300	0.89	0.93	2.92	3.07
350	0.97	1.02	3.18	3.34
400	1.04	1.09	3.41	3.58
450	1.11	1.17	3.64	3.82
500	1.17	1.23	3.84	4.03
550	1.23	1.29	4.04	4.24
600	1.31	1.38	4.30	4.51
750	1.47	1.54	4.82	5.06
865	1.59	1.67	5.22	5.48
1000	1.73	1.82	5.68	5.96

Specifications are subject to change without notice.

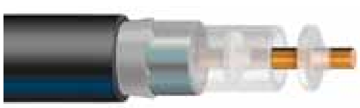
MC² 750 Series Cables
Product Descriptions

CommScope offers MC² disc-and-air dielectric coaxial distribution cable in addition to our traditional foam dielectric lines. MC² offers the lowest available attenuation in the smallest diameter cable, thereby maximizing conduit efficiency and/or minimizing HFC plant active requirements. Fully bonded performance and a variety of jacket configurations make MC² a flexible alternative. Like all CommScope distribution products, MC² 500, 650 and 750 are available preinstalled in ConQuest Conduit.

Aerial Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO750CB 	offers all of MC²'s standard construction features (without a jacket)	164 lbs/kft (244 kg/km)	231 lbs/kft (344 kg/km)	2700 ft (823 m)
MO750CU 	offers all of MC²'s standard construction features	206 lbs/kft (307 kg/km)	273 lbs/kft (407 kg/km)	2700 ft (823 m)

Underground Construction

Catalog Number	Description	Cable Weight	Nominal Shipping Weight	Standard Length
MO750CJ 	features CommScope's Migra-Heal® flooding compound that seals jacket damage to inhibit corrosion	213 lbs/kft (317 kg/km)	280 lbs/kft (417 kg/km)	2700 ft (823 m)

For more information, call Customer Service at 800.982.1708 or 828.324.2200 • Fax 828.328.3400 • custserv@commscope.com

MC[®] 750 Series Cables
Product Specifications

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.185	4.70
Nominal Diameter Over Dielectric	0.714	18.14
Nominal Diameter Over Outer Conductor	0.762	19.36
Nominal Outer Conductor Thickness	0.024	0.61
Jacket Versions		
Nominal Diameter Over Jacket	0.842	21.39
Nominal Jacket Wall Thickness	0.040	1.02
Nominal Diameter Over Flooded Jacket (CJ)	0.855	21.72
Messenger Version		
Diameter of Steel Messenger	0.188	4.78

Mechanical Characteristics

Minimum Bending Radius:		
(No Jacket)	8.0 in.	17.8 cm
(Jacketed)	8.0 in.	17.8 cm
(Armored)	8.0 in.	17.8 cm
Maximum Pulling Tension	500 lbs.	227 kg
Minimum Breaking Strength of Messenger (188)	6650 lbs.	3023 kg

Electrical Characteristics

Capacitance	14.9 pF/ft ± 1.0	48.9 pF/km ± 3.0
Impedance	75 ± 2 ohms	
Velocity of Propagation	93%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.46 ohms/1000 ft.	1.51 ohms/km
Outer Conductor	0.23 ohms/1000 ft.	0.75 ohms/km
Loop	0.69 ohms/1000 ft.	2.26 ohms/km

Attenuation [@ 68° F. (20° C.)]

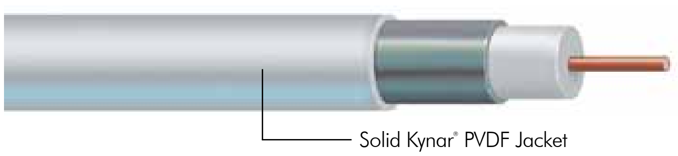
Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.10	0.11	0.33	0.34
55	0.34	0.36	1.12	1.17
83	0.41	0.43	1.35	1.41
211	0.65	0.68	2.13	2.24
250	0.71	0.75	2.33	2.45
300	0.77	0.81	2.53	2.65
350	0.84	0.88	2.76	2.89
400	0.90	0.94	2.94	3.08
450	0.95	1.00	3.12	3.27
500	1.01	1.06	3.31	3.48
550	1.06	1.11	3.48	3.65
600	1.10	1.16	3.61	3.79
750	1.23	1.29	4.04	4.24
865	1.32	1.39	4.33	4.55
1000	1.44	1.51	4.72	4.96

Specifications are subject to change without notice.

Specialty Application Cables

P3 500 JCAP Product Specifications

P3 500 JCAP (2312)



Copper clad aluminum center conductor dielectric of foamed Teflon® fluorinated ethylene propylene; solid aluminum sheath; solid Kynar® PVDF jacket.

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.109	2.77
Nominal Diameter Over Dielectric	0.452	11.43
Nominal Diameter Over Outer Conductor	0.500	12.70
Nominal Outer Conductor Thickness	0.024	0.64
Nominal Diameter Over Jacket	0.524	13.31
Nominal Jacket Wall Thickness	0.012	0.30

Mechanical Characteristics

Minimum Bending Radius	8.0 in.	20.32 cm
Maximum Pulling Tension	300 lbs.	136.08 kg_f

Electrical Characteristics

Capacitance	16.4 ±1.0 pf/ft	54 ± 3.0 nf/km
Impedance	75 ± 2 ohms	
Velocity of Propagation	86%	

Nominal D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	1.42 ohms/1000 ft.	4.33 ohms/km
Outer Conductor	0.40 ohms/1000 ft.	1.31 ohms/km
Loop	1.79 ohms/1000 ft.	5.64 ohms/km

Attenuation [@ 68° F. (20° C.)]

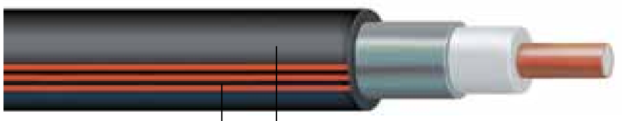
Frequency (MHz)	(dB/100 ft) Nominal	(dB/100 ft) Maximum	(dB/100 m) Nominal	(dB/100 m) Maximum
5	0.17	0.19	0.56	0.62
55	0.59	0.65	1.94	2.13
83	0.74	0.81	2.43	2.66
211	1.30	1.43	4.27	4.69
300	1.62	1.78	5.31	5.84
350	1.80	1.98	5.91	6.50
400	1.97	2.17	6.46	7.12
450	2.14	2.35	7.02	7.71
500	2.31	2.54	7.58	8.33
550	2.48	2.73	8.14	8.96
600	2.62	2.88	8.60	9.45
700	2.92	3.21	9.58	10.53
750	3.04	3.34	9.97	10.96
865	3.42	3.76	11.22	12.34
900	3.47	3.82	11.38	12.53
1000	3.78	4.16	12.40	13.65

Specifications are subject to change without notice.

Kynar® is a registered trade name of Atofina®
Teflon® is a registered trade name of du Pont de Nemours and Company®

COMMSCOPE®

PF 625 JCA (Power Feeder®)



Power Feeder® cable is used for delivery of centralized power in today's networks. Coaxial familiarity and the lowest DC Loop Resistance available in a convenient feeder cable size makes Power Feeder the choice for power delivery.

Copper clad aluminum center conductor; expanded polyethylene dielectric; continuous aluminum outer conductor; polyethylene (PE) jacket, tracers (3 red stripes).

Physical Dimensions

Component	Inches	mm
Nominal Center Conductor Diameter	0.325	8.26
Nominal Diameter Over Dielectric	0.515	13.08
Nominal Diameter Over Outer Conductor	0.625	15.88
Nominal Diameter Over Jacket	0.685	17.40
Nominal Diameter Over Flooded Jacket (JCASS)	0.695	17.65
Nominal Jacket Wall Thickness	0.030	0.76

Maximum D.C. Resistance @ 68°F (20°C)

Copper Clad

Inner Conductor	0.155 ohms/1000 ft.	0.509 ohms/km
Outer Conductor	0.135 ohms/1000 ft.	0.443 ohms/km
Loop	0.290 ohms/1000 ft.	0.951 ohms/km

Weight

284 lbs. per 1000 feet

Mechanical Characteristics

Minimum Bending Radius		
(Jacketed)	9.0 in.	22.9 cm
Maximum Pulling Tension	800 lbs.	362.8 kg_f

Electrical Characteristics

Impedance	23 ohms ± 2 ohms

Specifications are subject to change without notice.

Trunk and Distribution
Packaging and Shipping Information

COMMSCOPE®

Standard Cable Lengths

QR® Cable	
.320 in. (8.13 mm)	3,700 ft. (1128.0 meters)
.540 in. (13.72 mm) JCA, JCASS & JCAR	3,700 ft. (1128.0 meters)
.540 in. (13.72mm) JCAM, 2J(MA) CASS & JACASS	3,700 ft. (1128.0 meters)
.715 in. (15.8 mm)	3,000 ft. (914.6 meters)
.860 in. (21.84 mm)	2,700 ft. (833.3 meters)

P3®, CableGuard®, Riser and Plenum Cable	
.500 in. (12.7 mm)	2,400 ft. (731.5 meters)
.565 in. (14.40 mm)	2,450 ft. (747.0 meters)
.625 in. (15.8 mm)	2,400 ft. (731.5 meters)
.700 in. (17.86 mm)	2,500 ft. (762.0 meters)
.750 in. (19.1 mm)	2,500 ft. (762.0 meters)
.840 in. (21.34 mm)	2,450 ft. (747.0 meters)
.875 in. (22.2 mm)	2,500 ft. (762.0 meters)

MC² Cable	
.500 in. (12.7 mm)	4,600 ft. (1402.1 meters)
.650 in. (16.51 mm)	4,000 ft. (1219.2 meters)
.750 in. (19.05 mm)	2,700 ft. (823.6 meters)

NOTE: Each shipment shall be standard lengths, plus or minus 10%. Not more than 10% of shipment shall be other than standard lengths. No length shall be shorter than 2000ft. for MC2 and P3.

Method of Shipment
Method of shipment at discretion of shipper, unless specified in order.

Inspection
Inspection and final acceptance shall be made at factory prior to shipment.

Storing CommScope Cable
Reels of cable should remain properly wrapped to prevent damage during storage. Select a storage location to minimize the chances of damage during cable storage.

If cable is to be stored indoors and a forklift is available, the reels can be stacked on their sides. Trunk reel sizes 35″ x 18″ and 42″ x 17½″ (flange x traverse width) can be stacked up to 4 reels high. Other reel sizes may be stacked a maximum 3 reels high. To facilitate stacking and unstacking with a forklift and to prevent damage, place four or more 2″ x 4″ spacers under each reel. The spacers should be placed under the bolts of the reel. This will enable the forks to slide safely between the reels and will also prevent moisture from accumulating and damaging the reel.

If cable is to be stored outdoors and a forklift is available, the cable may be stacked as previously described. However, if a forklift is not available, cable can be stored on rolling edge. Reels should be lined up in rows end to end so that the flanges of the reels touch each other.

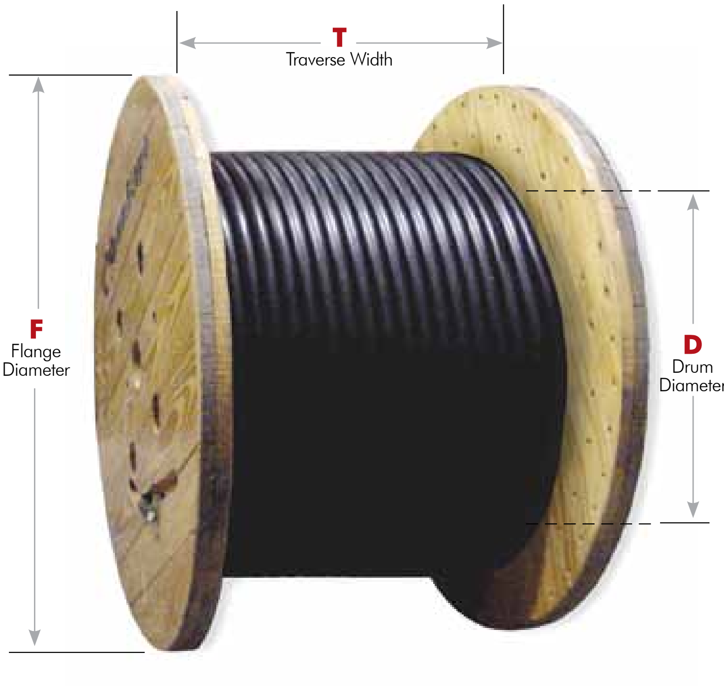
Cable stored in the outside areas should be stored in a covered area; however if that is unavailable, cable should be covered with plastic, canvas, or other protective covering. Also, the ground should be somewhat level and have good drainage to reduce the possibility of deterioration of the reel flanges.

Reel Size Example

F x D x T
Flange Drum Traverse

F = Flange Diameter (in inches)
D = Drum Diameter (in inches)
T = Traverse inside distance between flanges (in inches)

Note: T is inside dimension, not overall width



Notes:

1. An additional 4.0 inches should be added to the traverse width to obtain the total width of the trunk and distribution reel size.

   Example: **50" x 24" X 24"**
   total width will be 28" (50 x 24 x 28).

2. All T&D reels have an arbor hole diameter of $3^{1}/_{8}$".

Formulas for Calculating Shipping Weights

([Standard Reel Length/1000] x Cable Weight) + Reel Weight = Shipping Weight (In Imperial Units)

(Standard Reel Length x Cable Weight) + Reel Weight = Shipping Weight (In Metric Units)

QR Cable Weights

Catalog Number	Cable Weight		Standard Reel Length		Reel Size	Reel Weight		Shipping	
	lbs/kft	kg/km	ft	km	inches	lbs	kg	lbs	kg
QR 320 JCA	47	70	3,700	1.128	35 x 16 x 18	60	27	234	106
QR 320 JCAR	56	83	3,700	1.128	35 x 16 x 18	60	27	267	121
QR 540 JCA	91	135	3,700	1.128	42 x 24 x 24	105	48	442	200
QR 540 JCASS	92	137	3,700	1.128	42 x 24 x 24	105	48	445	203
QR 540 JACASS	211	314	3,700	1.128	50 x 24 x 24	182	83	962	436
QR 540 JCAM-109	132	196	3,700	1.128	45 x 18 x 24	142	64	631	285
QR 715 JCA	145	216	3,000	0.914	45 x 20 x 24	150	68	585	266
QR 715 JCASS	145	216	3,000	0.914	45 x 20 x 24	150	68	585	266
QR 715 JACASS	289	430	3,000	0.914	54 x 30 x 30	211	96	1,078	489
QR 715 JCAM-188	232	342	3,000	0.914	54 x 24 x 24	208	94	904	407
QR 860 JCA	215	320	2,700	0.823	54 x 24 x 24	208	94	789	357
QR 860 JCASS	215	320	2,700	0.823	54 x 24 x 24	208	94	789	357
QR 860 JACASS	393	585	2,700	0.823	61 x 30 x 24	256	116	1,318	598
QR 860 JCAM-188	308	458	2,700	0.823	61 x 30 x 30	256	116	1,088	493

See next page for P3 Cable Weights

Trunk and Distribution
Packaging and Shipping Information

COMMSCOPE®

Formulas for Calculating Shipping Weights

([Standard Reel Length/1000] x Cable Weight) + Reel Weight = Shipping Weight (In Imperial Units)
(Standard Reel Length x Cable Weight) + Reel Weight = Shipping Weight (In Metric Units)

P3 Cable Weights

Catalog Number	Cable Weight lbs/1000 ft	Cable Weight kg/km	Standard Reel Length feet	Standard Reel Length km	Reel Size inches	Reel Weight lbs	Reel Weight kg	Shipping lbs	Shipping kg
P3 500 CA	72	107	2,400	0.732	35 x 10 x 18	60	27	234	106
P3 500 JCA	95	141	2,400	0.732	35 x 10 x 18	60	27	287	130
P3 500 JCASS	98	146	2,400	0.732	35 x 10 x 18	60	27	295	134
P3 500 JACASS	210	313	2,400	0.732	42 x 24 x 24	105	48	609	276
P3 500 JCAM 109	134	199	2,400	0.732	42 x 18 x 17.5	101	46	423	192
P3 500 JCASS CG	137	204	2,400	0.732	42 x 24 x 24	105	48	435	197
P3 565 CA	88	131	2,450	0.747	42 x 18 x 17.5	101	46	317	144
P3 565 JCA	112	167	2,450	0.747	42 x 18 x 17.5	101	46	375	171
P3 565 JCASS	116	173	2,450	0.747	42 x 18 x 17.5	101	46	385	175
P3 625 CA	116	173	2,400	0.732	42 x 18 x 17.5	101	46	380	172
P3 625 JCA	141	210	2,400	0.732	42 x 18 x 17.5	101	46	439	200
P3 625 JCASS	145	216	2,400	0.732	42 x 18 x 17.5	101	46	449	204
P3 625 JACASS	281	418	2,400	0.732	50 x 24 x 24	182	83	856	389
P3 625 JCAM 109	180	268	2,400	0.732	50 x 24 x 24	182	83	614	279
P3 625 JCASS CG	190	283	2,400	0.732	50 x 24 x 24	182	83	638	290
P3 700 CA	129	192	2,500	0.762	42 x 18 x 24	103	47	425	193
P3 700 JCA	160	238	2,500	0.762	42 x 18 x 24	103	47	503	228
P3 700 JCASS	165	246	2,500	0.762	42 x 18 x 24	103	47	516	234
P3 750 CA	164	244	2,500	0.762	45 x 20 x 24	150	68	560	255
P3 750 JCA	199	296	2,500	0.762	45 x 20 x 24	150	68	648	295
P3 750 JCASS	204	304	2,500	0.762	45 x 20 x 24	150	68	660	300
P3 750 JACASS	362	539	2,500	0.762	54 x 24 x 24	208	94	1,113	505
P3 750 JCAM 188	292	435	2,500	0.762	54 x 24 x 24	208	94	938	426
P3 750 JCAM 250	345	513	2,500	0.762	54 x 30 x 30	211	96	1,073	487
P3 750 JCASS CG	256	381	2,500	0.762	54 x 24 x 24	208	94	848	385
P3 840 CA	184	273	2,450	0.732	55 x 30 x 24	198	90	649	295
P3 840 JCA	225	335	2,450	0.747	55 x 30 x 24	198	90	749	340
P3 840 JCASS	233	347	2,450	0.747	55 x 30 x 24	198	90	769	349
P3 875 CA	216	321	2,500	0.762	55 x 30 x 24	198	90	738	335
P3 875 JCA	257	382	2,500	0.762	55 x 30 x 24	198	90	840	381
P3 875 JCASS	263	391	2,500	0.762	55 x 30 x 24	198	90	855	388
P3 875 JACASS	432	643	2,500	0.762	61 x 30 x 24	256	116	1,336	607

MC² Cable Weights

MO500CB	78	116	4,600	1.4020	42 x 18 x 17.5	101	46	460	209
MO500CJ	111	165	4,600	1.4020	42 x 18 x 25	103	47	614	279
MO500CMA	140	208	4600	1.4020	54 x 24 x 24	208	94	852	387
MO500CU	106	158	4600	1.4020	42 x 18 x 25	103	47	591	268
MO650CB	112	167	4000	1.2190	50 x 24 x 24	182	83	630	286
MO650CG	292	435	4000	1.2190	61 x 30 x 24	256	116	1424	646
MO650CJ	153	228	4000	1.2190	50 x 24 x 24	182	83	794	360
MO650CMC	280	279	4000	1.2190	61 x 30 x 24	256	116	1376	625
MO650CU	147	219	4000	1.2190	50 x 24 x 24	182	83	770	350
MO750CB	164	244	2700	0.8230	50 x 24 x 24	208	94	651	295
MO750CG	368	548	2700	0.8230	61 x 30 x 24	256	116	1250	567
MO750CJ	213	317	2700	0.8230	50 x 24 x 24	182	83	757	344
MO750CMC	340	506	2700	0.8230	61 x 30 x 24	256	116	1174	533
MO750CU	206	307	2700	0.8230	50 x 24 x 24	208	94	764	347

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ACT® - Advanced Coring Technology

Setting a New Standard in Cable Technology!

COMMSCOPE®

Advanced Coring Technology

- Enhanced Mechanical Performance
- Meets/Exceeds ANSI/SCTE, EN50117, IEC and Cenelec
- Fully Backward Compatible
- Identical in Electrical Performance
- Patented

Traditional coaxial trunk and distribution cables require considerable attention to the preparation of the cable end for proper connectorization. Critical to that end preparation is the proper removal of dielectric and bonding compound from the conductors.

The normal process for this requires the craftsman to first core the cable and then clean the center conductor in a second step. CommScope's new P3® with ACT® and QR® with ACT® cables virtually eliminate the center conductor cleaning step by enabling a clean coring process in which the center conductor is cleaned of dielectric and bonding compound during the coring process.

These cables meet and exceed all ANSI/SCTE, EN50117, IEC and Cenelec testing methods for trunk, feeder, and distribution cables.

P3® and QR® with ACT were developed to address a question that has been clearly stated and often repeated by the craftsmen, engineers, and technical operations managers of the broadband industry.

Why must a hardline cable be so difficult and problematic to properly core and prep?

Before the introduction of ACT cables, craftsmen struggled with the cleaning of the center conductor. To remove the remaining dielectric and bonding compound craftsmen have:

- Used a metallic blade, resulting in loss of copper and negatively impacting the skin effect.
- Used a torch to heat up and soften the material, resulting in dielectric melt down inside the cable. This dielectric melt down causes changes in the electrical and mechanical performance characteristics of the cable.
- Used chemical and petroleum based solvents to remove the material, exposing them to a toxic hazard unnecessarily and leaving inappropriate residues on the center conductor.
- Used a center conductor cleaning tool that requires blades to be replaced as they become worn or damaged.
- Used nothing, leaving the dielectric and bonding compound residue and causing poor signal performance and electrical anomalies.

Below is an example of a traditional P3® Cable:

Residual dielectric and bonding compound on conductor after coring

Below is an example of P3® Cable with ACT®:

Conductor clean of dielectric and bonding compounds after coring

ACT cables not only eliminate all of these issues, but also significantly reduce the time needed to core and prep the cable end and make connectorization easier. This is accomplished through the development of an advanced technology bonding agent coupled with CommScope's consistent manufacturing capabilities. This patented formulation leverages the shearing action produced by every coring tool enabling most tools to produce a one pass coring operation leaving the conductors clean of dielectric and bonding compounds. Tools and craft skill may affect the clean coring capabilities.

P3 and QR with ACT are expected to provide system operators with a reduction in truck rolls and labor cost for trunk and distribution plant. This reduction of truck rolls and labor cost is achieved through consistent clean coring. Ensuring that this critical step in the connectorization process is done right the first time every time eliminating many of the issues associated with poor connectorization, thus reducing the need to return to troubled locations to make corrective changes.

Coaxial Bonding - Optimizing Preparation and Connectorization

Technical Report

COMMSCOPE®

Hardline coaxial cables have been used in the broadband industry for decades. During these years many refinements were made to these cables to produce the optimal cable electrical and mechanical performance. Today, with a better knowledge of processes and recent advancements in material, cables are again being further optimized.

Introduction

Coaxial cables have several interface areas between metals and plastics. Each of these interfaces offers a unique set of issues to the user and manufacturer, all related to the bonding of the plastics to the metals. It is bonding that enhances the mechanical performance of a coaxial cable; enabling improved bend performance, core retention, and inhibiting moisture migration.

Just as essential as the cable's mechanical performance is the ability to properly prepare and connectorize a cable. There must be a balance to achieve both with optimal results. This paper will provide an understanding of what trade-offs are made when going to the extremes in bonding, preparation performance, and the optimal zone for a cable to be in.

Industry Standards

To assure a cable's performance for the user, the industry has adopted standardized test methods and minimum specifications for defining the bond characteristics of coaxial cable.

As a starting point, the SCTE in its "Specification for Trunk, Feeder and Distribution Coaxial Cable" [ANSI/SCTE 15 2006] specifies minimum bond strength between the dielectric and the center conductor defined as "Dielectric Shear Adhesion". The bond strength values vary with cable size, with larger cables having higher bond strength requirements than smaller cables.

Cable Type	Bond Strength Miminum Pound Force
P3	
500	60
625	80
750	90
875	86
QR	
540	68
715	90
860	96

ANSI/SCTE 15 2001 - Table 10.0

AGT®

Advanced Coring Technology

Enhanced Mechanical Performance

Meets/Exceeds ANSI/SCTE, EN50117,IEC and Cenelec Specifications

Fully Backward Compatible

Identical Electrical Performance

Patented

As an example, a P3 500 cable size has a minimum bond strength requirement of 60 lbs., while a P3 750 cable size has a requirement of 90 lbs.

Additional important attributes of the bond are identified in this specification. First, a "Dielectric Shrinkback" requirement in which the shrinkback of the dielectric shall shrink no more than 0.250 inches (6.35 mm) from both ends of the sample following test procedure ASTM D 4565. Second, is the "Cable Static Minimum Bend" tested following ANSI/SCTE 39 2001.

The Bond

Typical bond strengths of today's cables well exceed these minimum requirements, being as much as 100% above that specified by ANSI/SCTE. Such a conservative approach is understandable given that there was no cost penalty to create a bond that performed at such a high level, and that operating at that level eliminated any potential for poor performance due to low bond strength. With excessively high bond strengths, controlling the consistency of the cable's quality is less demanding. The negative impact of this for the cable's user is a difficult preparation and connectorization process.

At the other end of the spectrum are poorly bonded cables that do not meet the specified ANSI/SCTE requirements. The typical cause of low bond strength is attributed to the inability to control a consistent manufacturing process. The negative impact of this for the cable's user is poor core retention, moisture migration, and poor bend performance (kinks easily).

There is an operating range, though, in between these two extremes of performance that facilitates a dielectric bond that will cleanly break away from the center conductor without sacrificing the mechanical aspects of the cable.

CommScope has developed, ACT (Advanced Coring Technology), a patented bonding technology that operates in this window between the extremes. As shown in the chart in Figure 1, it exceeds the SCTE requirements for bond strength and provides for a clean and easy removal of the bonding material.

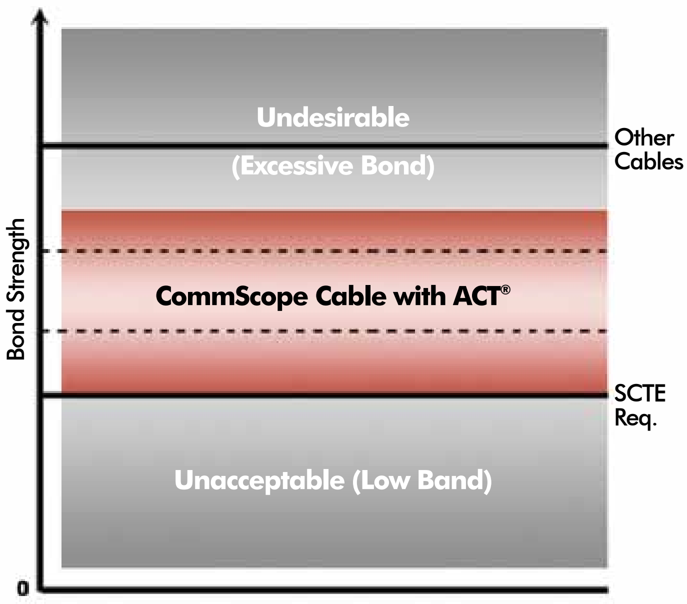

FIGURE 1

With this technology, the force exerted by the coring tool is sufficient to cause the dielectric to break away from the center conductor, leaving a clean conductor that typically does not require a second dielectric removal step. The tool and the craftsman can influence this enhanced performance characteristic of the cable, making a one step coring highly repeatable.

In addition to bond strength, the bonding agent also maintains the other key performance criteria of the cable as called out in the SCTE specification. Some of those criteria are listed in Table 1.

Measure	Passes SCTE Requirement
Center Conductor Bond Strength	✓
Center Conductor Corrosion	✓
Water Penetration	✓
Air Transmission	✓
Dielectric Shrink Back	✓
Velocity of Propagation	✓
Attenuation	✓

TABLE 1 – CABLE PERFORMANCE WITH ACT.

Overall this solution provides all of the benefits of water migration deterrence, corrosion prevention, and mechanical performance while eliminating the performance risks associated with center conductor dielectric removal.

Summary

The bond strength in cable is critical to the mechanical performance of the cable. However, bonding affects more than just the cable's mechanical characteristics, it also impacts the facilitation of cable preparation and connectorization. Finding the balance of bond strength and craft friendliness is accomplished by the development of an advanced technology bonding agent and coupling it with CommScope's consistent manufacturing process controls. This achievement enables the cable to mechanically behave the way it needs to and makes the preparation easier.

Coaxial Bonding
Technical Report

COMMSCOPE®

Introduction

Coaxial cable is a composite assembly of various metals and plastics arranged in a manner that creates an efficient wave guide for RF transmission. Coaxial cable manufacturers like CommScope are challenged with the tasks of selecting the appropriate materials for this construction and fitting them together in such a way that the cable will provide optimum electrical and mechanical performance. Electrical performance is evaluated in terms of industry standard measures like attenuation, impedance, capacitance, resistance and structural return loss. Mechanical performance is evaluated in terms of bending radii, ease of handling and compatibility with connectors, which also have industry standard criteria. This report will discuss the application of coaxial bonding, one of the techniques used to achieve certain mechanical performance properties.

Coaxial cable's composite construction has several interface areas between metal and plastic. Each of these interfaces offers a unique set of issues to the user and the manufacturer, and has a unique and industry standard test method to define its effectiveness. These industry standard test methods have been defined and accepted by the SCTE Interface Practices subcommittee, and are recognized as the defining criteria for coaxial cable system performance.

Single Bonding

A coaxial trunk and distribution cable will typically have a copper clad aluminum center conductor. This conductor interfaces with a foamed polyethylene dielectric material. In years past, differential expansion between the metal and plastic caused pull outs, so an aggressive adhesive precoat is employed today to prevent any differential movement of the center conductor. (See Figure 1.) This precoat also prevents moisture from migrating along the center conductor.

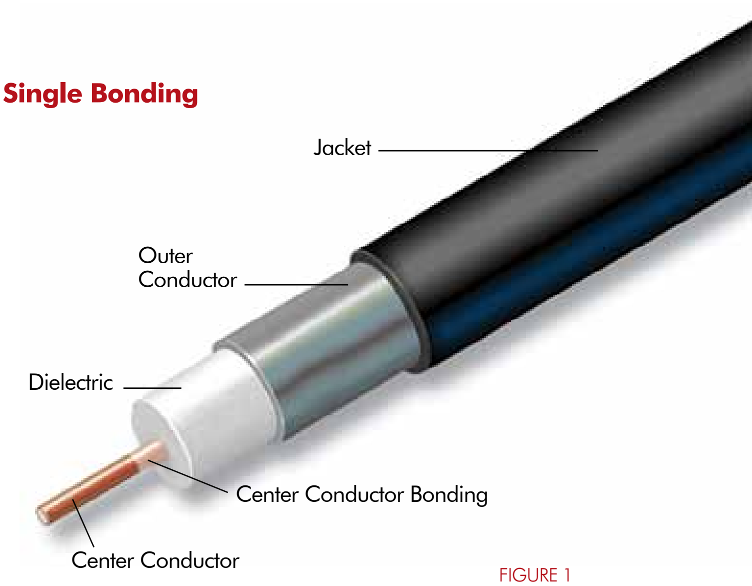

FIGURE 1

A coaxial cable with this interface bonded may be referred to as single bonded. CommScope catalogs refer to this construction as standard.

The tests utilized to ensure this single bonded precoat is effective measure the force required to remove the center conductor from the dielectric material, as well as the leakage of pressurized air. These test procedures are listed in Table 1.

Double Bonding

A double bonded cable utilizes an adhesive at the second plastic/metal interface where the dielectric joins the shield. (See Figure 2.) Again, this interface offers a unique set of issues. Differential movement at the dielectric/shield interface is not a concern due to the compression used in cable construction and the large surface area shared. It has been shown, however, that cable bending performance can be improved through the utilization of double bonding, particularly when thinner aluminum shields are employed.

Center Conductor/Single Bond Standard Tests	
SCTE IPS TP 103	Air Leakage Test Method For Trunk, Feeder and Distribution Cable
SCTE IPS TP 005	Test Method for Center Conductor Bond to Dielectric

TABLE 1

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One challenge in double bonding is that adhesives must be selected to adhere when the user and manufacturer want them to, and yet to release at appropriate times. A bonding adhesive must provide adhesion and augment bending while assembled, but must core out appropriately to provide good connector interfacing. In the case of P3 cable, an adhesive has been selected which provides added bending enhancements as required yet releases and cores out very cleanly.

The tests utilized to prove the effectiveness of a double bonded construction are simply minimum bend radius and coring. An appropriately selected and applied adhesive will allow a cable to meet and/or exceed its published minimum bend radius specification, yet it will core out cleanly. These standard, industry accepted and relevant tests clearly show that an adhesive is operating in the proper performance "window", adhering when it should and releasing when it should. The standard test for minimum bend radius is listed in Table 2. These tests include a -40° C verification of bending performance.

Other "tests" are occasionally demonstrated to show performance differences between cable types. These differences are often an artifact of the particular "test" method, and as such often irrelevant to cable performance in the field. CommScope recommends all performance comparisons be made utilizing the industry standard and relevant tests in Table 2.

Triple Bonding

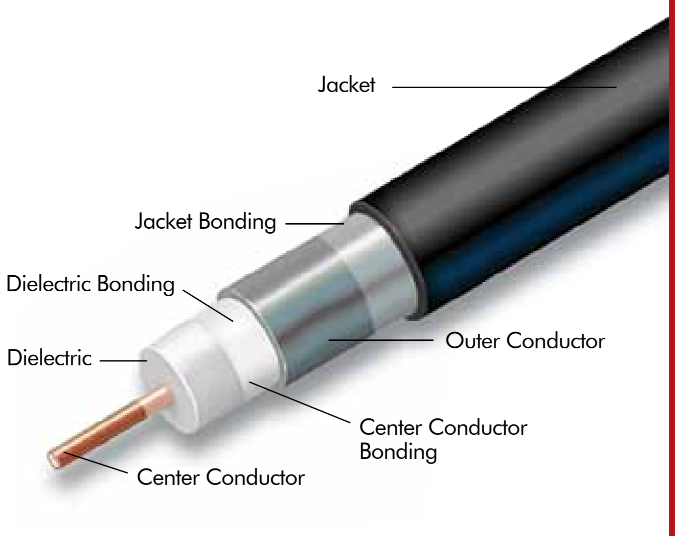

FIGURE 3

Double Bonding

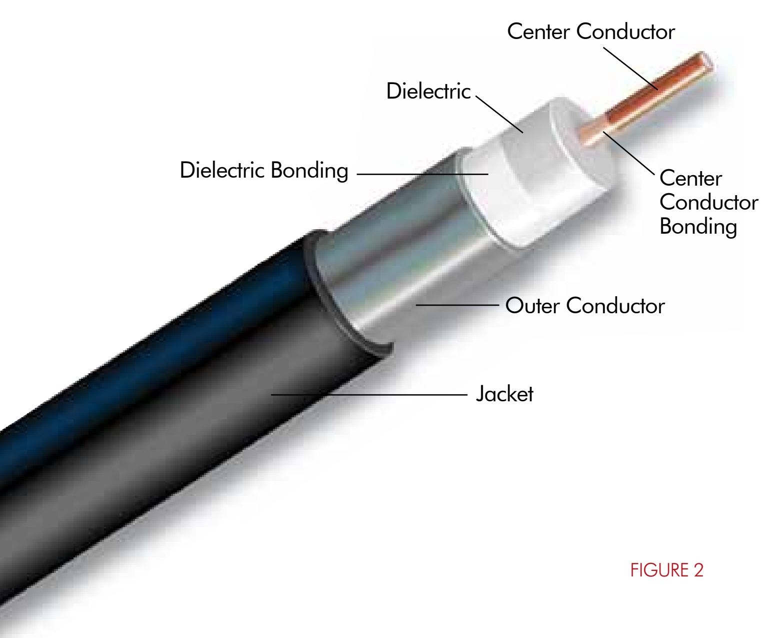

FIGURE 2

Triple Bonding

Triple bonding refers to the additional application of adhesive to the coaxial shield/jacket interface. (See Figure 3) This bond eliminates jacket shrinkage. Advanced connector designs can also eliminate jacket shrink, as in the QR family of cable and connectors. Cable geometry can also force a requirement for triple bonding, as is the case with thin shield P3 type designs. These cables are unable by design to bend tightly, and rely on triple bonding to achieve reasonable bends.

Triple bonding is also limited in its application. Flooded products cannot be triple bonded, since the presence of flooding compounds will defeat adhesives. This fact can lead to bending issues with underground cables which, by design, depend on flooding.

There are no industry standard tests to verify the effectiveness or presence of triple bonding. CommScope catalogs refer to both double and triple bonded products as "bonded", since bending specifications are identical.

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Shield/Double Bond Standard Tests	
SCTE IPS TP 108 **ANSI/SCTE 39**	Test Method for Static Minimum Bending Radius for Coaxial Trunk, Feeder and Distributions Cables
Telcordia TR-NWT-001399	Generic Requirements for Coaxial Distribution Cable 5.1 Cable Bend Test
ASTM D 4565	34. Cable Bend Test

TABLE 2

Summary

Bonding adhesives are applied at different levels with different constructions, and for unique purposes. The center conductor bond is aggressive to prevent movement and water migration. The dielectric/shield or "double bond" adhesive is optimized to provide bending enhancement while releasing cleanly for connector application. The optional triple bond or jacket bond is only required when a cable's design restricts bending. All of these bonding techniques are best evaluated by industry standard performance criteria, which have been developed to ensure relevant and useful product comparisons and performance.

Introduction

Coaxial cable, the traditional choice for delivery of video services to the home, is today the choice for delivery of modern multimedia video and data services. Three distinct coaxial distribution technologies exist today - the traditional P3® style coaxial cable, MC2® disc-and-air dielectric cable and the newer, precision engineered QR® coaxial cable. This paper will discuss the advantages of this newer technology in building networks for the next century.

The History of QR

Until the development of CommScope's QR technology, traditional coaxial cable manufacturing had changed very little from its inception. A coaxial cable begins with a center conductor, typically of copper or copper clad aluminum, which is coated with an extruded plastic dielectric. This 'dielectric core' is extremely tough and flexible, and can literally be tied into knots without changing shape. Unfortunately much of the inherent flexibility of the product is lost when the dielectric core is placed inside a rigid aluminum tube, which makes the coaxial shield.

Rigid aluminum serves as a wonderful RF shield for the coax, and partially serves as a current return path. Unfortunately this shield also makes coaxial trunk and distribution cable stiff, and limits its bending radius.

CommScope engineers determined that if a coaxial cable could be manufactured with a more flexible shield, the strength and flexibility of the dielectric core would better exhibit itself in the performance of the finished coaxial cable. CommScope developed QR with that goal in mind.

QR is manufactured by rolling and forging a precision aluminum strip around the dielectric core in a continuous process. The aluminum strip is more flexible and less work hardened than an aluminum tube. The cable is simultaneously jacketed, providing even greater mechanical enhancement.

Mechanical Benefits

The precision forged QR shield is less work hardened than a standard coaxial tube, and is much easier to bend and flex. This means a finished cable has a much smaller minimum bending radius, and a much longer flex life in an expansion loop.

Expansion loops are placed into coaxial cable to provide excess cable length required during daily and seasonal cable expansion and contraction. These loops see repeated flexure, and are a primary failure point in coaxial plant. QR's greater flexibility has been shown to increase the life of the cable in an expansion loop by a factor of 2 to 3. QR precision shield requires less metal by volume than a traditional coaxial cable, which results in a lower cable weight. QR's lower weight, combined with tremendous cable flexibility, makes QR the easiest cable to install. QR requires proportionally less of its maximum pulling tension to install than a comparably sized rigid aluminum tube product. QR is also a 100% jacketed product, unlike traditional coaxial products, which may be purchased bare. This jacket provides environmental protection, and has also allowed the development of connectors which grip the cable jacket and form an additional environmental seal at the cable's most vulnerable point - the connector interface.

CommScope QR® JCA
Coaxial Cable

Electrical Performance

QR was developed with all these mechanical advantages in mind - and it was also designed with an eye toward electrical enhancement. The electrical advantages of QR include its attenuation and Structural Return Loss (SRL) performance.

Attenuation

Coaxial attenuation is usually a function of cable size. Larger cables have lower attenuation. The DOD, or the distance from the center conductor to the shield, determines the cable attenuation.

QR was designed with a thinner shield, which allow larger DOD than comparably sized cable. This design allows the attenuation of QR to be lower than the attenuation of a comparable size traditional cable. This fact has caused QR to be referred to as a 'low loss' product for many years.

QR® Coaxial Cable

Learn the Technology and Advantages

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Structural Return Loss

Structural Return Loss (SRL) is the result of periodic impedance variations being induced into a coaxial cable. These impedance changes can be due to small fluctuations in diameter or material size. When impedance changes appear periodically in the cable, they will induce a loss at a frequency corresponding to their own frequency.

Great care is taken in coaxial manufacturing to prevent these impedance effects from occurring. The QR process was developed to minimize these impedance effects, and reliably produces cable with the lowest SRL.

DC Loop Resistance

DC loop resistance is a function of the quantity of metal in a cable. Larger cables have more metal, and a lower DC loop resistance than smaller cables. DC loop resistance is specified in ohms/1000'.

QR cables have less metal in the shield than a comparably sized rigid aluminum cable, and have a higher DC loop resistance for that reason. This is a parameter that should be taken into consideration when a system is being designed, but the designer should also consider the following facts about DC loop resistance.

Span Resistance

As broadband systems are upgraded, the electronics and corresponding frequencies of operation are changed. Newer systems operate at much higher frequencies than older systems. At these higher frequencies, coaxial cable attenuation is higher, and the distance between system components is reduced.

Span resistance is the product of the DC loop resistance (ohms/1000') and the span length, measured in feet. It can be shown that as span lengths shorten, the span resistance of a QR cable is equivalent to the old span resistance of a traditional cable, even though the DC loop resistance is higher. (See example below.)

Multiple Return Paths and Effective DC Loop

An installed broadband plant completes one portion of a very complex electrical circuit. While DC loop resistance measured in the laboratory is a simple combination of the resistance of the center conductor and shield added together, the effective DC loop resistance seen in the field will be much lower. This is due to the additional current return paths that are added to the coaxial shield through grounding and bonding.

Example:

Assume a budget of 22 dB between amplifiers.

In a P3 750 plant at 450 MHz, the span can be calculated using the attenuation value:
1.12 dB/100' at 450.

(22 dB) / (1.12 dB/100') X (100) = 1964 feet span length

The span resistance can be calculated by multiplying the DC loop resistance by the span length
(0.76 ohms/1000') X (1964 feet) / (1000) = 1.49 ohms

Now, let's upgrade the plant to 750 MHz, and switch to QR 715, which has an attenuation of
1.49 dB/100' at 750 MHz, and a loop resistance of .997 ohms/1000'.

(22 dB) / (1.49 dB/100') X (100) = 1477 feet span length

The span is shorter to accommodate the higher frequency.

Now we can calculate the span resistance.

(.997 ohms/1000') X (1477 feet) / (1000) = 1.47 ohms

The QR 715 span, shortened for the higher frequency of operation in the upgrade,
has a lower span resistance than the original traditional 750 span.

In the laboratory, DC loop resistance is measured by allowing current to flow down the center conductor, and back on the shield. The resistance measured, and published, is the resistance of the center conductor plus the resistance of the shield. Larger cables have larger center conductors and larger outer conductors, which have more metal content and lower DC resistance.

In an installed plant, the cable is grounded and bonded to the strand (aerial) or to the electronics and ground blocks (buried). These electrical connections allow current which traveled forward on the center conductor to return to ground through many low resistance paths in addition to the coaxial shield. CommScope's testing has shown that the effective DC loop resistance in an installed plant is much lower than published, and is roughly equivalent for QR and traditional coax (see the graph below).

System Design and QR

The design of a system using QR is no different than when using traditional coax, with the notable exception of the advantages QR provides.

Mechanical Considerations

QR has much lower pull tension requirements than traditional coax. This fact will be noticed in longer and easier pulls, either aerial or through conduit. QR blows into conduit readily, and is rugged enough for direct burial. All standard construction practices have been used with QR with great success.

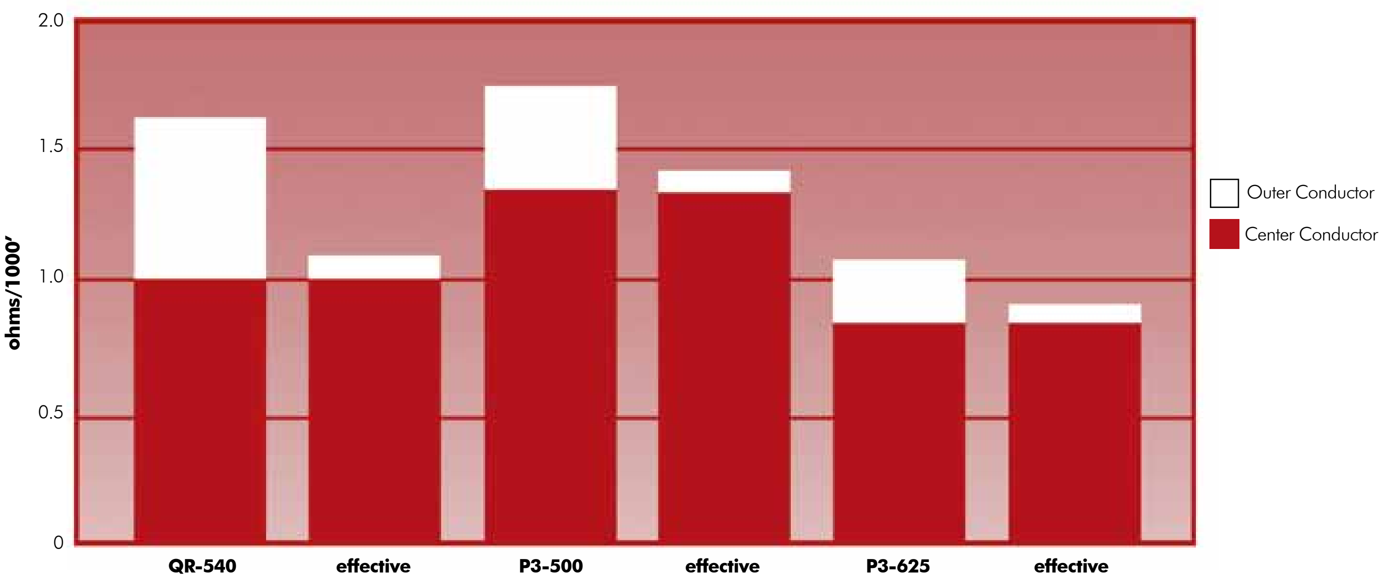
When forming expansion loops, QR's flexibility and ease of pulling require that forming boards or tools be left in place until the adjacent loop is formed, or the loops may pull out. This simple precaution should be a part of all construction manuals.

Electrical Considerations

QR has lower attenuation than comparably sized traditional products. The published attenuation of QR products must be substituted during system design. In addition, the DC loop resistance of QR should be taken into account during system design, but is rarely an issue given the closer spacing of electronics in today's high bandwidth networks.

Overall, the electrical design of a system using QR is identical to that of any other cable type. QR has attenuation and resistance specifications that vary from traditional coax products, but they simply must be taken into account by the designer, and levels and spacing adjusted accordingly.

Loop Resistance of Feeder Cable



Effective DC loop includes contribution of strand, neutral ground, etc.

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Telephony Considerations

QR has been successfully deployed in networks designed for broadband telephony as well as CATV. CommScope has customers in both the CATV and telephone industries, and both are using QR.

Telephony designs require additional attention be paid to powering of the system. Reliability of power supplies have raised an interest in centralized powering, a design where the power supplies are focused at the node, rather than spread throughout the system. These centralized power designs generally require that power be expressed out to remote network locations.

CommScope has developed a product for this express power feed, called PowerFeeder®. PowerFeeder has the lowest available DC loop resistance, in a convenient feeder cable size. It is ideal for any power only application where neither traditional coax nor QR is suitable.

Telephony builds can be designed for QR or traditional coax products with only minor differences in levels and spacing. QR is more than capable of carrying the higher currents required by telephony. QR products are qualified at voltages and currents far beyond those used, or even predicted.

CommScope PowerFeeder® Cable

Conclusion

QR is the cable of choice for cost, longevity, ease of use and performance. It has been selected by telephone and CATV companies alike for CATV and telephony builds, in the United States and internationally. No other product can match it's unique blend of performance and cost effectiveness.

QR...In design and performance, already a century ahead.