Contents

Introduction

Advanced broadband telecommunication networking requests hybrid fiber and coaxial cable technology. This network has not only to supply video entertainment but must also carry interactive video-data and voice informations. Such a telecommunication network requires high quality coaxial cables for low loss and reliable signal transmission.

The coaxial cables have to be installed in conditions where weather and corrosion resistance are essential features to offer a high level of safety as well as long service life.

The aging stability is an important requirement to be met by the transmission characteristics of those cables. The variation of the electrical characteristics in function of frequency and temperature must be exactly determined.

The high signal level sometimes transmitted by the coaxial cables, as well as the high noise level outside the cables, require a very low transfer impedance or high screening attenuation.

EUPEN cables are specifically designed for the needs of modern telecommunication systems:

- Ideal for broadband fiber/coax network architecture as well as conventional CATV and CCTV installations.

- Engineered for fast, smooth installation and developed with the installer in mind.
EUPEN *cable is easy to handle, strips clean without scraping.*

- Outstanding mechanical and electrical performance specifications.

- The quality products are delivered fast and on time, saving your time and money by means of technical support and training.

- Meet EN-50117 and IEC 96 standards.

For ***EUPEN*** coaxial cables a large range of connectors with feed-through, pin or 3,5/12 interfaces are available and we are ready to give you any assistance you may require to determine which will best meet your requirements.

Together the cables and the connectors from ***EUPEN*** is an unbeatable match that optimizes entire system performance.

1. COAXIAL CABLES

75 Ohms COAXIAL CABLES from EUPEN

EUPEN cables embody innovative design, careful choice of raw materials and consistant manufacturing and quality assurance techniques. The result is a coaxial cable with superior electrical and mechanical performance.

Our coaxial cable design with low density cellular polyethylene foam dielectric and ring-corrugated copper outer conductor and our long experience in manufacturing these cables are your guarantee for the supply of a technically optimal construction, characterised by:

- *excellent flexibility*
- *good transverse stability*
- *excellent screening efficiency*
- *very good corrosion resistance*
- *longitudinal watertightness*
- *absolute transverse tightness*
- *no use of dissimilar metals*
- *a very thin precoating layer*
- *easy and reliable installation of connectors*

The cable ***inner conductor*** is made of solid copper.
The ***dielectric*** is cellular polyethylene foam manufactured by a unique insulation process using ozone friendly expander gas. High foaming ratio guarantee low attenuation transmission.
The foam dielectric is bonded to the inner conductor by a pre-coating layer. This layer ensures good adhesion of the inner conductor to the dielectric. It also permits easy, clean removal of the dielectric during connector installation.
The ring-corrugation of the copper ***outer conductor*** improves bending performances and ensures the good adhesion of the outer conductor to the dielectric.
Highest possible screening attenuation is obtained with the metallically closed tube outer conductor.

The ***copper*** outer conductor material increases service life and reduces systems maintenance costs due to long term reliable connector contacts and high corrosion resistance compared to cables where aluminium is used.
With this unique construction no relative movement between inner and outer conductor occurs due to bending, pulling and temperature variations.

The standard cable construction uses all weather-resistant black polyethylene as ***outer sheath***.
For additional requirements regarding flame-retardancy the coaxial cables are available with a flame-retardant and halogene-free outer sheath. In this construction they meet the international standards on flame propagation acc. to IEC 332-3, smoke density acc. to IEC 1034 and evolved gases acc. to IEC 754.

Trunk and Distribution Cables of the LD - series

Cables without messenger

Cable Type ***Size***	**7228** **7/8“**	**7168** **5/8“**	**7128** **1/2“**	**7118** **2,65/11,0**	**7088** **2,0/8,30**	**7098** **2,1/8,7**
Order n°	7452	7363	7504	7845	7456	8319
Construction						
Inner conductor						
Diameter (mm)	5,7	3,9	3,1	2,65	2,0	2,10
Dielectric						
Material	LD-PC					
Diameter (mm)	23,5	16,0	12,4	11,2	8,3	8,75
Outer conductor						
Construction and material	Cu-tape longit. welded, ring-corrugated [1]					Cu-tape longit. welded, smooth
Diameter (mm)	25,0	17,2	13,7	12,0	9,3	
Outer sheath						
Material	PE					
Thickness (mm)	1,5	1,3	1,1		1,0	
Diameter (mm)	28,0	19,8	16,0	14,3	11,3	
Approx. weight (kg/km)	668	348	253	210	141	143
Mechanical characteristics						
Minimum bending radius						
a) single bending (cm)	20	14	11,5	10,5	8	15
b) 10 repeated bendings (cm)	30	25	20	18,5	14	35
Maximum pulling strength (daN)	300	200	160	140	100	90
Recommanded temperature range						
- Storage	-40 to +85°C					
- Installation	-10 to +60°C					
- Operation	-40 to +85°C					
Breaking strength of the AGS messenger (daN)	1700	750	540		430	
Maximum pole spacing for the AGS messenger [2] (m)	53	47[3]		50	53	

Cables with stranded AGS messenger

Cable Type ***Size***	**A 7228** **7/8“**	**A 7168** **5/8“**	**A 7128** **1/2“**	**A 7118** **2,65/11,0**	**A 7088** **2,0/8,30**	**A 7098** **2,1/8,7**
Order n°	7453	7455	7505	7846	7457	8320
Construction						
Composition of messenger (mm)	7 x 3,15	7 x 2,0	7 x 1,7	7 x 1,7	7 x 1,52	7 x 1,52
Outer sheath						
Material	PE					
Thickness (mm)	1,5	1,3	1,1		1,0	≥ 1,0
Outer diameter of insulated messenger (mm)	12,5	8,6	7,7	7,4	6,4	
Overall outer dimensions (mm)	28,0/42,0	19,8/28,9	16,0/24,5	14,3/23,2	11,3/19,1	11,3/18,3
Approx. weight (kg/km)	855	445	326	280	198	

Cable Type ***Size***	**7228** **7/8“**	**7168** **5/8“**	**7128** **1/2“**	**7118** **2,65/11,0**	**7088** **2,0/8,30**	**7098** **2,1/8,7**
Order n°	7452	7363	7504	7845	7456	8319
Electrical characteristics						
DC resistance at 20°C						
- inner conductor (Ω/km)	0,68	1,45	2,90	3,20	5,50	4,90
- outer conductor (Ω/km)	0,90	1,45	1,75	2,13	2,80	2,50
- loop resistance (Ω/km)	1,58	2,90	4,65	5,33	8,30	7,40
Nominal capacitance (pF/m)	50					
Characteristic impedance (Ω)	75 ± 2					
Velocity ratio %)	88					
Nominal attenuation at 20°C						
1 MHz (dB/100m)	0,11	0,16	0,20	0,23	0,30	0,28
10 MHz (dB/100m)	0,33	0,50	0,62	0,72	0,95	0,90
50 MHz (dB/100m)	0,79	1,15	1,42	1,63	2,14	2,00
100 MHz (dB/100m)	1,13	1,63	2,05	2,32	3,00	2,90
200 MHz (dB/100m)	1,67	2,35	2,90	3,35	4,35	4,15
300 MHz (dB/100m)	2,08	2,95	3,60	4,15	5,40	5,10
400 MHz (dB/100m)	2,49	3,50	4,25	4,85	6,30	5,90
450 MHz (dB/100m)	2,65	3,75	4,50	5,20	6,70	6,30
800 MHz (dB/100m)	3,65	5,20	6,30	7,15	9,15	8,50
1000 MHz (dB/100m)	4,23	6,00	7,10	8,10	10,30	9,65
1750 MHz (dB/100m)	6,00	8,40	9,40	11,20	13,90	13,10
Coefficient of attenuation variation with temperature above 1 MHz (1/°C)	2.10^{-3}					
Dielectric loss factor between 5 and 800MHz	$<1.10^{-4}$					
SRL (VSWR)						
30...300 MHz (dB)	30 (1,06)		28 (1,08)	27 (1,09)	26 (1,10)	
300...600 MHz (dB)	26 (1,10)		25 (1,12)	24 (1,13)	23 (1,15)	
600...900 MHz (dB)	24 (1,13)		23 (1,15)	22 (1,17)	21 (1,20)	
Screening attenuation above 10 MHz (dB)	>> 120					
Insulation resistance (MΩ.km)	$> 5.10^{3}$					
Dielectric strenght of the insulation (kV)	9	6	5	4	3	
Approx. current rating (50 - 60 Hz) (A)	90	36	22	16	11	12

[1] By the corrugations of the ringed types, cables with a 100% longitudinal tightness are realized.
Observation : These cables are available with an inner conductor of annealed copper wire.

[2] The maximum pole spacing takes into account a safety factor of 6 and a cable sag of 1 m at an average temperature of +15°C in countries with moderate climate.

[3] For a pole spacing of 50 m, the safety factor is reduced from 6 to 5.

Trunk and Distribution Cables of the STANDARD-series

Cables without messenger

Cable Type ***Size***	**7222** **7/8“**	**7162** **5/8“**	**7122** **1/2“**	**7082** **1,75/8,20**	**7062** **1/4“**	**7092** **1,96/8,75**
Order n°	9137	4499	9135	9131	1710	1716
Construction						
Inner conductor						
Diameter (mm)	5,1	3,45	2,7	1,75	1,4	1,96
Dielectric						
Material	PC-GI					PC
Diameter (mm)	23,5	16,0	12,4	8,2	6,5	8,75
Outer conductor						
Construction and material	Cu-tape longit. welded, ring-corrugated [1]					Cu-tape longit. welded, smooth
Diameter (mm)	25,0	17,2	13,7	9,3	7,5	9,3
Outer sheath						
Material	PE					
Thickness (mm)	1,5	1,3	1,1	1,0	1,1	1,0
Diameter (mm)	28,0	19,8	16,0	11,3	9,7	11,3
Approx. weight (kg/km)	689	372	268	142	115	152
Mechanical characteristics						
Minimum bending radius						
a) single bending (cm)	17	11	8	4,5	3	15
b) 10 repeated bendings (cm)	25	20	15	7,5	5	35
Maximum pulling strength (daN)	300	200	160	100	80	90
Recommanded temperature range						
- Storage	-40 to +85°C					
- Installation	-10 to +60°C					
- Operation	-40 to +85°C					
Breaking strength of the AGS messenger (daN)	1700	750	540	430		
Maximum pole spacing for the AGS messenger [2] (m)	50	46[3]		53	57	52

Cables with stranded AGS messenger

Cable Type ***Size***	**A 7222** **7/8“**	**A 7162** **5/8“**	**A 7122** **1/2“**	**A 7082** **1,75/8,20**	**A 7062** **1/4“**	**A 7092** **1,96/8,75**
Order n°	1739	4498	3136	9132	1711	1717
Construction						
Composition of messenger (mm)	7 x 3,15	7 x 2,0	7 x 1,7	7 x 1,52		
Outer sheath						
Material	PE					
Thickness (mm)	1,5	1,3	1,1	1,0	1,1	1,0
Outer diameter of insulated messenger (mm)	12,5	8,6	7,7	6,4	6,8	6,4
Overall outer dimensions (mm)	28,0/42,0	19,8/28,9	16,0/24,5	11,3/18,9	9,7/16,8	11,3/18,3
Approx. weight (kg/km)	908	465	341	199	172	207

Cable Type ***Size***	**7222** **7/8“**	**7162** **5/8“**	**7122** **1/2“**	**7082** **1,75/8,20**	**7062** **1/4“**	**7092** **1,96/8,75**
Order n°	9137	4499	9135	9131	1710	1716
Electrical characteristics						
DC resistance at 20°C						
- inner conductor (Ω/km)	0,89	1,80	2,96	7,10	11,40	5,65
- outer conductor (Ω/km)	0,90	1,45	1,75	2,80	3,30	2,50
- loop resistance (Ω/km)	1,79	3,25	4,71	9,90	14,70	8,15
Nominal capacitance (pF/m)	54					
Characteristic impedance (Ω)	75 ± 2					
Velocity ratio (%)	82					
Nominal attenuation at 20°C						
1 MHz (dB/100m)	0,12	0,17	0,21	0,33	0,43	0,31
10 MHz (dB/100m)	0,38	0,53	0,70	1,09	1,33	0,99
50 MHz (dB/100m)	0,87	1,26	1,58	2,45	3,00	2,25
100 MHz (dB/100m)	1,26	1,80	2,20	3,50	4,30	3,25
200 MHz (dB/100m)	1,85	2,75	3,35	5,10	6,20	4,70
300 MHz (dB/100m)	2,35	3,40	4,30	6,40	7,65	5,90
400 MHz (dB/100m)	2,85	4,10	5,10	7,60	8,90	6,90
450 MHz (dB/100m)	3,05	4,40	5,48	8,00	9,50	7,40
800 MHz (dB/100m)	4,50	6,20	7,70	11,00	13,20	10,50
1000 MHz (dB/100m)	5,30	7,20	9,10	12,40	15,80	12,00
1750 MHz (dB/100m)	7,40	10,50	13,20	18,00	22,00	17,00
Coefficient of attenuation variation with temperature above 1 MHz (1/°C)	2.10^{-3}					
Dielectric loss factor between 5 and 800MHz	$<2.10^{-4}$					
SRL (VSWR)						
30...300 MHz (dB)	30 (1,06)	30 (1,06)	28 (1,08)	26 (1,10)	25(1,12)	26(1,10)
300...600 MHz (dB)	26 (1,10)	26 (1,10)	25 (1,12)	23 (1,15)	22(1,17)	23(1,15)
600...900 MHz (dB)	24(1,13)	24(1,13)	23(1,15)	21(1,20)	20(1,22)	21(1,20)
Screening attenuation above 10 MHz (dB)	>>120					
Insulation resistance (MΩ.km)	$> 5.10^{3}$					
Dielectric strenght of the insulation (kV)	17	12	9	6	5	6
Approx. current rating						

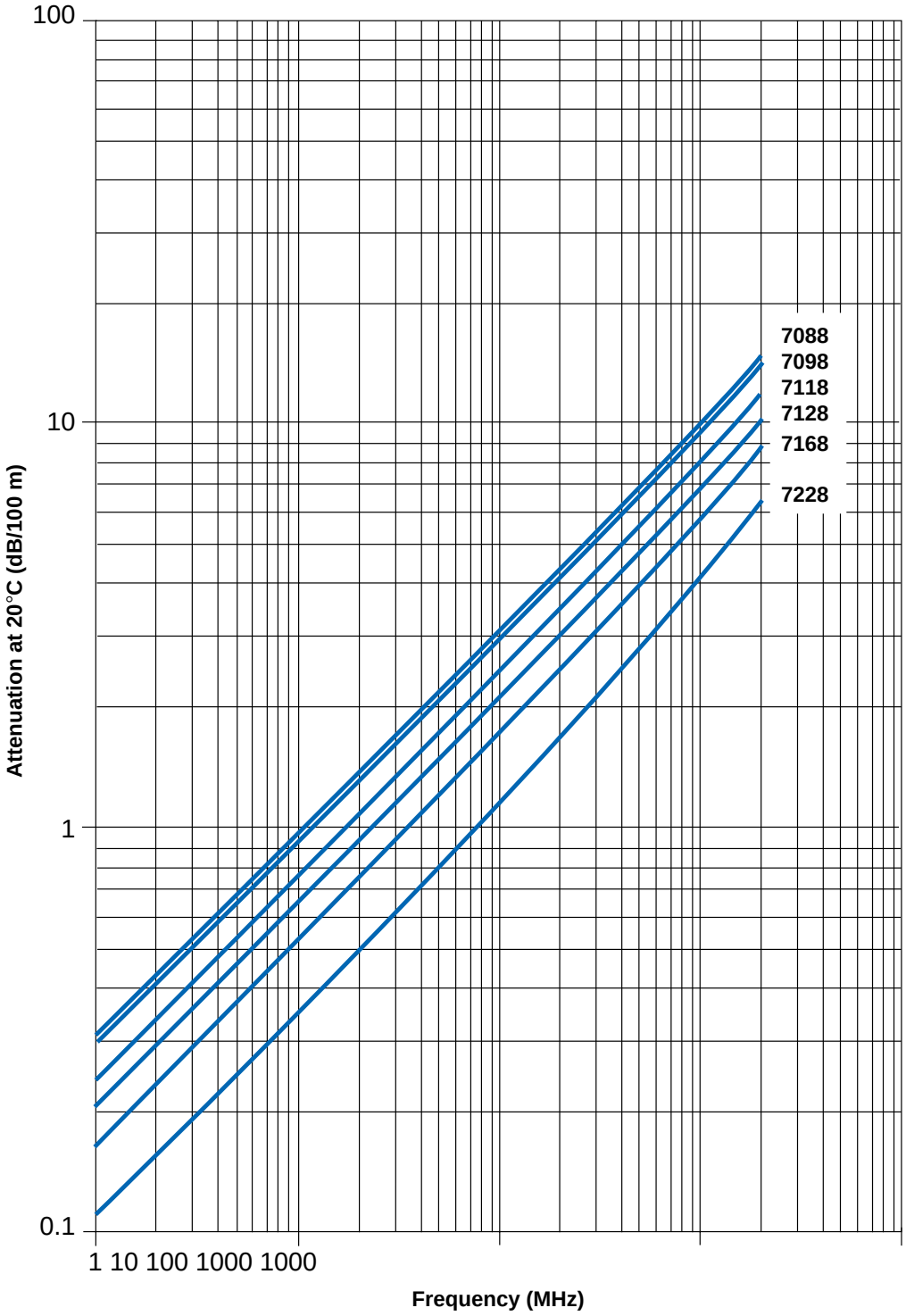
[1] By the corrugations of the ringed types, cables with a 100% longitudinal tightness are realized.
Observation : These cables are available with an inner conductor of annealed copper wire.

[2] The maximum pole spacing takes into account a safety factor of 6 and a cable sag of 1 m at an average temperature of +15°C in countries with moderate climate.

[3] For a pole spacing of 50 m, the safety factor is reduced from 6 to 5.

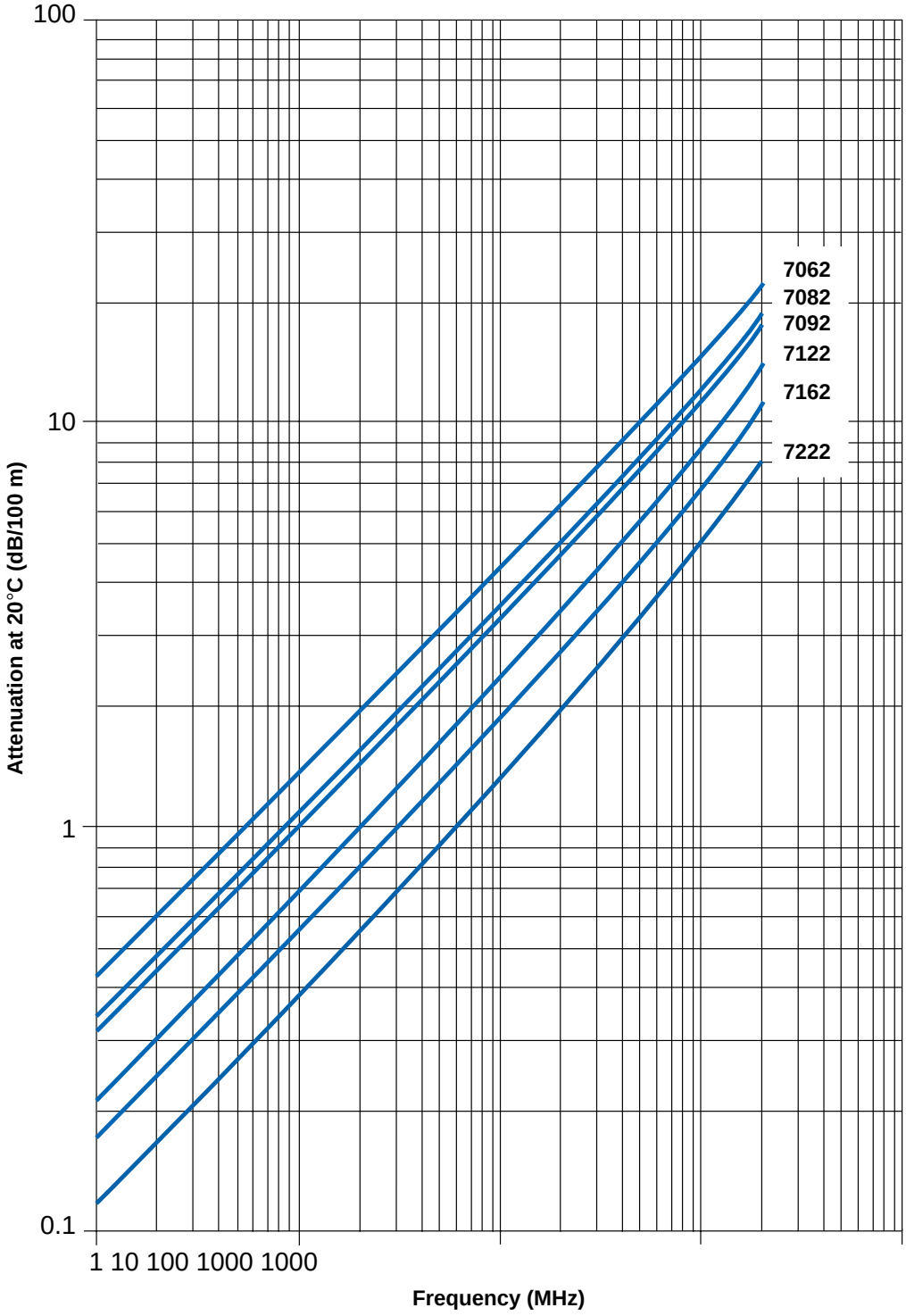
Attenuation

Trunk and distribution cables of the LD-series



Attenuation

Trunk and distribution cables of the STANDARD-series



2. CONNECTORS

To simplify your choice for cable accessories we can supply a large range of connectors.

RF connectors with normalized feedthrough, PIN or 3,5/12 interfaces have been engineered to provide the best electrical and mechanical solution for your cable installation.

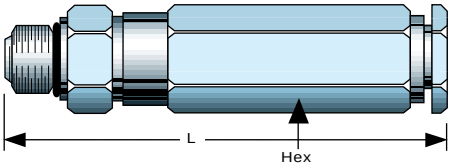
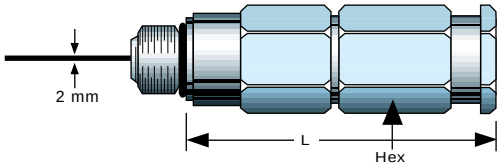
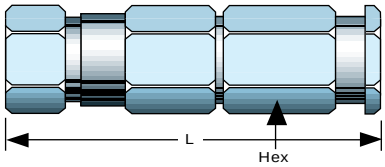
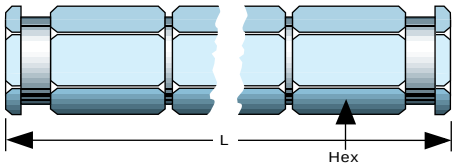
The fast and easy installation of the connectors are important additional advantages.

The main features of the RF connectors are:

- *high return loss*
- *very low intermodulation*
- *high contact force*
- *no special tools required for installation*
- *fast and easy installation*
- *no soldering*
- *waterproof sealing*
- *corrosion resistant*

Precision-machined, heavy-duty bodies are nickel-chrome plated brass. Contacts made of brass to minimize intermodulation. Solderless design simplifies field installation and avoids lost parts.
A captivated center pin prevents pin-depth problems; it's beryllium-copper spring fingers provide excellent electrical contact. Self-flaring bodies seat perfectely between the dielectric and outer conductor, eliminating the use of special tools. Spring fingers in the back end of connector provide powerful retention and solid electrical contact with the outer conductor. The spring finger assembly rotates freely within the back nut, preventing the fingers from breaking or bending during installation.

Connectors for trunk and feeder cables

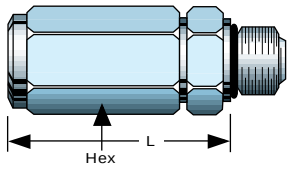
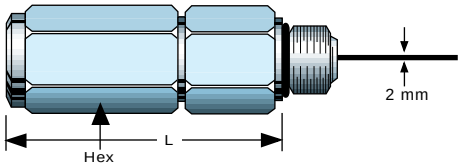
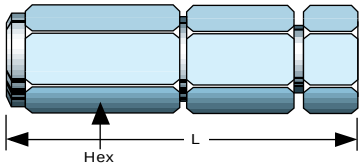
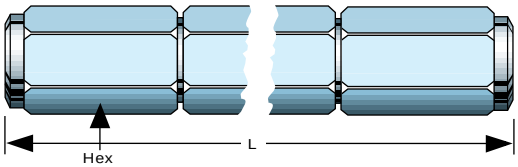
CONNECTORS	Cable Type*	Ref. n°	Hex	L
	**FEEDTHROUGH CONNECTOR**			
	7128	BFT 1/2 CU LD	24	75
	7168	BFT 5/8 CU LD	28	75
	**PIN CONNECTOR**			
	7128	BC 1/2 LD FER	24	60
	7168	BC 5/8 LD FER	28	72
	7228	BC 7/8 LD FER	36	72
	**3,5/12 CONNECTOR**			
	7128	3.5/12M BC 1/2 LD FER	24	70
	7168	3,5/12M BC 5/8 LD FER	28	92
	7228	3,5/12M BC 7/8 LD FER	36	92
	**SPLICE CONNECTOR**			
	7128	SP BC 1/2 LD FER	24	115
	7168	SP BC 5/8 LD FER	28	144
	7228	SP BC 7/8 LD FER	36	144

Notes:

- Other thread and pin size (length and diameter) are available.
- For other cable size, contact us.
- Other type of connectors are available (IEC, F, ...), contact us.
- Ask for the latest detailed spec sheet.

- Return loss >35 dB at 860 Mhz
- High retention force
- Very low contact resistance (metal to metal contact)
- Easy to use
- Design & construction adapted to the cable

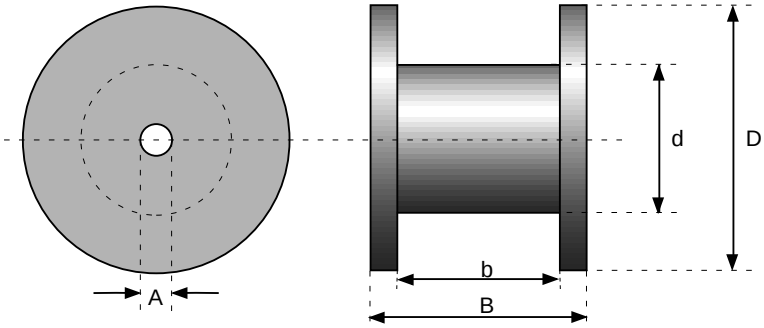
Connectors for trunk and feeder cables

Cable Type*	Ref. n°	Hex	L	CONNECTORS
FEEDTHROUGH CONNECTOR				
7088, 7082, 7092, 7098	BFT 8,00/8,75 SC NOR	19	41	
7118	BFT 11,00 LD	24	48	
PIN CONNECTOR				
7088, 7082, 7092, 7098	BC 8,00 LD/8,75SC NOR	19	48	
7118	BC 11,00 LD	24	50	
3,5/12 CONNECTOR				
7088, 7082, 7092, 7098	3,5/12M BC8,0 LD/8,75	22	65	
7118	3,5/12M BC11,0 LD	24	50	
SPLICE CONNECTOR				
7088, 7082, 7092, 7098	SP BC 8,00 LD/8,75	22	110	
7118	SP BC 11,00 LD	24	110	

- Return loss >30 dB at 860 Mhz
- High retention force
- Very low contact resistance (metal to metal contact)
- Easy to use
- Design & construction adapted to the cable

3. Cable packing informations

Drum dimension & weight



	D (m)	B (m)	b (m)	d (m)	A (mm)	Weight (kg)
Drum Type						
HE7 [1)]	0.70	0.43	0.40	0.45	40	8.7
708	0.80	0.64	0.50	0.40	65	59
710	1.0	0.75	0.60	0.50	65	100
711	1.14	0.75	0.60	0.55	90	105
712	1.2	1	0.72	0.80	90	115
714	1.4	1	0.84	0.80	90	190
715	1.5	0.99	0.82	0.75	90	205
717	1.80	1.12	0.94	0.95	90	280
720	2.05	1.24	1.02	1.10	120	470

[1)] only for indoor use

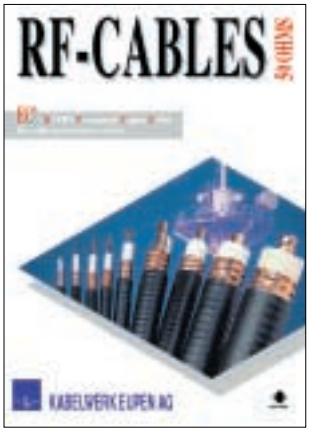
Maximum cable length/drum

Cable Type	7222/7228	7162/7168	7122/7128	7118	7082/7088 7092/7098	7062
Size	7/8“ (m)	5/8“ (m)	1/2“ (m)	2,65/11,0 (m)	2,0/8,30 - 2,1/8,7 (m)	1/4“ (m)
Drum Type						
HE7 [1)]			250	280	600	700
708			600	700	1000	1700
710		650	900	1100		
711		750	1300			
712	600	1200	1800			
714	830					
715	1000					
717	1400					
720	1800					

[1)] only for indoor use

4. Additional products

- 75 Ohms subscriber cables for CATV
- RG cables
- 50 Ohms RF-cables for radio transmission systems
- Fastenings for the installation of RF-cables (***Eucafast***)
- RF-cables for radiotransmission in tunnels (***Radiating Cables***)
- Fibre optic cables and accessories



RF-CABLES 75 OHMS ■

IQNet

THE INTERNATIONAL CERTIFICATION NETWORK

IQNet Registration No. 93 093b

This is to state that

CABLERIE D'EUPEN S.A.
Malmedyer Straße 9
4700 EUPEN (Belgium)

holds the
Quality System Certificate
AVI (valid until : 2002-01-21)

for the scope specified thereon and for the standard

EN ISO 9001

Signed for and on behalf of IQNet

Dr. Klaus PRUCK
President of IQNet

1999
1999-11-22

Jean De Cordier
Chairman Certification Committee

BELGERT

AIB-VINÇOTTE International Ltd.

Brussels, Belgium

Quality System Certificate

EN ISO 9001 : 1994

This is to certify that CABLERIE D'EUPEN S.A.

located at Malmedyer Straße 9
4700 EUPEN (Belgium)

has established and is maintaining a Quality System which is in accordance with the requirements of EN ISO 9001 : 1994 "Quality system – Model for quality assurance in design, development, production, installation and servicing" for :

Power, communication, data and control, high frequency cables and accessories for communication and power cables

This Quality System's Certificate is based on the result of a quality audit documented in the Quality System Audit Report no. SF000056.001

This Quality System Certificate is granted subject to AIB-VINÇOTTE International's General Regulations on Quality Systems Certification.

Certificate number : 93 093b
Date of issue : January 22, 1999
This certificate expires on : January 21, 2002

Signed for the certification body

Ir. J. DE CORDIER
Chairman Certification Committee

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