

CAVEL®

50 Ohm COAXES 179 - EUROPE



Quality in _____

50 Ohm COAXES

WIRELESS Low Loss
RG/U MIL-C-17

Coaxes coded WL are 50 Ohm flexible cables manufactured by Italiana Conduuttori and they perform and combine a low loss feature to high performance of broadband (work up to 5.8 GHz).

CABLES' RANGE

A range of 5 cables is available now, ranging:

- from **WL195** (inner cond./overall \varnothing 1,00/4,95 mm)
- to the **WL500** (\varnothing 3.40/12.7 mm).

They are very flexible cables and you can avoid the use of jumpers in many installations/applications. This, results in reduced costs and better reliability and sometimes allows the use of smaller cables with attenuation equivalent to a larger diameter of corrugated cables.

WL cables have RF performance similar to traditional corrugated copper cables but they are highly more flexible, non-helicoidally twisting and offer unrivaled ease of installation and fast connectors insertion.

Especially compared to RG/U's these Wireless cables offer a much lower loss and better RF shielding.

These features make the WL range the best choice for any kind of so-called wireless application.

CONSTRUCTION CHARACTERISTICS

Their construction features include:

Dielectric of skin-foam-skin polyethylene

- By physical foam injection of Nitrogen, an inert gas with low rate of degradation over time
- Closed cells foam, which avoids moisture absorption
- High propagation speed
- Low attenuation losses

High performance flexible screen

- Composite aluminum multi-laminated tape screen (glued to dielectric in cables WL300-400-500)
- Increased shielding attenuation > 90dB, which is 50dB greater than the typical ones of single-braided RG/U cables, it determines 180dB of cross-talk between two adjacent cables
- Tape screen acts as a second barrier to humidity
- The tinned copper braid provides a good mean for grounding and it perfectly mate to the connector
- Besides, the accentuated FLEXIBILITY, being the distinctive

element of the entire WL series, also allows a lower bending radius.

Varied Outer Jackets by PE, PVC and LSZH

- All sheaths guarantee high STRENGTH against ATMOSPHERICAGENTS as well as good UV rays resistance and they allow an ultra-decade long-life expectancy.

Series WLxxx

- They have the most standard sheath, black polyethylene for outdoor laying, very resistant to UV rays and weather conditions; they are suitable for operating temperatures $-40^{\circ}+80^{\circ}\text{C}$.

Series WLxxxN

- PVC sheathed cables are characterized by greater flexibility among the others and allow an easier handling during internal installation;
- PVC is a less expensive compound than the halogen-free compound but in the case of fire it emits high-density toxic fumes;
- for this reason also are available the cables of

Series WLxxxZHN

- This range of cables is provided with LSZH polymeric compound outer sheath that in case of fire retards the flame and does not emit halogen black fumes, toxic to humans and corrosive to the apparatus. They are indicated in all safety applications, where fire resistance, low smoke emissions and low corrosiveness are required.

WLxxxFC Series (not listed in this catalogue)

- Waterproof cables, with polyethylene sheaths and an inert fluid between the screen and sheath (the so-called petrol jelly) are also available on request; This buffer eliminates the possibility of water and moisture infiltration, even if the sheath is damaged during installation or afterwards.

CONNECTION

WL cables are dimensioned in conductors, dielectric and sheath diameters to fit the most standard 50 Ohm connectors type N, BNC, TNC, SMA, UHF usually sold in trade, both soldered and non-soldered types.

APPLICATIONS

WL coaxial cables are used everywhere high performance and low losses are required, in applications like:

- Wiring of components and internal equipment
- Jumpers between cabinets and closets
- Base Transceiver Stations (BTS) and antenna jumpers
- Power supply of towers and telecommunication poles
- Installation of in-building wiring, including in bundle cabling in conditioning ducts
- Roof installation

They are suitable for use in all wireless applications, such as:

- Private mobile communications / dedicated two-way mobile
- Wi-Fi / Wi-Max
- Mobile phone networks (LTE antennas)
- Paging networks
- Satellite transmissions
- RFID (radiofrequency identification); access control
- In-building communications, e.g. buildings, tunnels, large works of art, etc.
- Railway transmission and control systems
- DAS - Distributed Antenna System
- Public security
- Wireless Internet (WISP)
- SCADA Telemetry – Supervisory Control and Data Acquisition, like a distributed IT system for electronic monitoring of physical systems
- Broadband transmission
- Wireless Machine-to-Machine (Wireless M2M)
- Oil & Gas
- Military and Defense



Application
Fire-Resistance Rating

Jacket

Wi-Fi; Wi-Max; BTS - Base Transceiver Station; Mobile phone network; LTE antenna; MMDS
PVC: IEC EN 60332-1-2; ZH: IEC EN 60332-3-24; EN 60754; EN 61034

CAVEL CODE

WL195N

WL240 N
WL240 ZHN

WL300 (PE)
WL300 N (PVC)
WL300 ZHN (LSZH)

CONSTRUCTION DATA

Inner Conductor	Ø mm	1,00
	material	Cu
Dielectric	Ø mm	2,80
	material	PEG
Screen		
1. Film Foil Laminate	material	APA
	Ø mm	2,89
2. Braid	material	CuSn
Braid Optical Coverage	%	80%
	Ø mm	3,37
Outer Sheath	Ø mm	4,95



	Outdoor material	
	Indoor; Outdoor material	PVC black (-N)
	Outdoor; Indoor; Safety material	

	Outdoor material	
	Indoor; Outdoor material	PVC black (-N)
	Outdoor; Indoor; Safety material	LSZH black (-ZHN)

	Outdoor material	PE black
	Indoor; Outdoor material	PVC black (-N)
	Outdoor; Indoor; Safety material	LSZH black (-ZHN)

PHYSICAL DATA

Copper Content	kg/km	16,8
Cable Weight (approx.)	kg/km	34,4
Min. Bending Radius 1/n	mm	50
Temperature in operation	N	180
Max. Tensile Strength	MJ/km	425
Fire Load	kWh/km	118

Copper Content	kg/km	25,3
Cable Weight (approx.)	kg/km	49,4
Min. Bending Radius 1/n	mm	60
Temperature in operation	N	360
Max. Tensile Strength	MJ/km	586 (N)
Fire Load	kWh/km	163 (N)

Copper Content	kg/km	43,9
Cable Weight (approx.)	kg/km	80,2
Min. Bending Radius 1/n	mm	75
Temperature in operation	N	540
Max. Tensile Strength	MJ/km	836 (ZHN)
Fire Load	kWh/km	232 (ZHN)

ELECTRICAL DATA

Impedance	Ohm	50 +/-2
Capacitance	pF/m	82 +/-2
Velocity Ratio	%	80

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Capacitance	pF/m	82 +/-2
Velocity Ratio	%	80

Impedance	Ohm	50 +/-2
Capacitance	pF/m	78 +/-2
Velocity Ratio	%	86

Attenuation (at 20°C) and Maximum Power		Attenuation dB	Max.Power kW	Attenuation dB	Max.Power kW	Attenuation dB	Max.Power kW
@	30 MHz	5,8	0,9	4,2	1,4	3,2	2,1
@	50 MHz	7,4	0,7	5,4	1,1	4,1	1,6
@	150 MHz	12,6	0,4	9,2	0,6	7,0	0,9
@	220 MHz	15,3	0,3	11,2	0,5	8,6	0,8
@	450 MHz	22,2	0,2	16,2	0,4	12,8	0,5
@	900 MHz	32,0	0,2	23,3	0,2	18,6	0,4
@	1500 MHz	41,9	0,1	30,7	0,2	24,5	0,3
@	1800 MHz	46,2	0,1	33,9	0,2	27,0	0,3
@	2000 MHz	49,0	0,1	35,9	0,2	28,6	0,2
@	2500 MHz	55,3	0,1	40,6	0,1	32,5	0,2
@	5800 MHz	88,2	0,1	65,2	0,1	50,0	0,1

Structural Return Loss (SRL)

@	5 - 470 MHz	dB	> 30
@	470 - 1000 MHz	dB	> 28
@	1000 - 2000 MHz	dB	> 26
@	2000 - 3000 MHz	dB	> 22

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@	470 - 1000 MHz	dB	> 28
@	1000 - 2000 MHz	dB	> 26
@	2000 - 3000 MHz	dB	> 22

@	5 - 470 MHz	dB	> 30
@	470 - 1000 MHz	dB	> 28
@	1000 - 2000 MHz	dB	> 26
@	2000 - 3000 MHz	dB	> 22

Screening Attenuation (SA)

	dB	> 90
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	dB	> 90
--	----	------

	dB	> 90
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DC Resistance inner conductor	Ohm/km	22,1
DC Resistance outer conductor	Ohm/km	15,3
Loop Resistance	Ohm/km	37,4
Max. Current (I _{max})	A	6
Sheath Insulation Voltage (Spark Test)	kV	3

DC Resistance inner conductor	Ohm/km	11,2
DC Resistance outer conductor	Ohm/km	12,4
Loop Resistance	Ohm/km	23,6
Max. Current (I _{max})	A	12
Sheath Insulation Voltage (Spark Test)	kV	5

DC Resistance inner conductor	Ohm/km	7
DC Resistance outer conductor	Ohm/km	7,3
Loop Resistance	Ohm/km	14,3
Max. Current (I _{max})	A	18
Sheath Insulation Voltage (Spark Test)	kV	5

Standard Packing

Put-Up	mode	pl. reel
Unit Length	m	100
Unit Packing Content	m	500
Packing Pattern (look at Cat. 512 page 25)	mod.	R100M
Fits CABLEBOX	item	DS100

Put-Up	mode	coil	pl. reel
Unit Length	m	100	100
Unit Packing Content	m	600	500
Packing Pattern (look at Cat. 512 page 25)	mod.	S100M	R100M
Fits CABLEBOX	item	DS100	DS100

Put-Up	mode	pl. reel	drum
Unit Length	m	200	500
Unit Packing Content	m	400	500
Packing Pattern (look at Cat. 512 page 25)	mod.	R200L	PD500
Fits CABLEBOX	item	DS250	-

WL400 (PE)
WL400 N (PVC)
WL400 ZHN (LSZH)

2,70
Cu
7,20
PEG

APAS (bonded)
7,35
CuSn
83%

10,30
PE black
PVC black (-N)
LSZH black (-ZHN)

80,2
147,5
100
720
1.517 (ZHN)
421 (ZHN)

50 +/-2
78 +/-2
86

Attenuation dB	Max.Power kW
2,0	3,4
2,6	2,6
4,6	1,5
5,7	1,2
8,7	0,8
12,5	0,6
16,6	0,4
18,2	0,4
19,3	0,4
22,0	0,3
29,4	0,2

> 30
> 28
> 26
> 22

> 90

3,4
5,4
8,8
25
8

pl. reel drum
100 500
200 500
R100L PD500
DS250 -

WL500 (PE)
WL500 N (PVC)
WL500 ZHN (LSZH)

3,40
Cu
9,40
PEG

APAS (bonded)
9,55
CuSn
78%
10,15

12,70
PE black
PVC black (-N)
LSZH black (-ZHN)

116,0
212,20
130
1.150
2.279 (ZHN)
633 (ZHN)

50 +/-2
78 +/-2
86

Attenuation dB	Max.Power kW
1,5	4,4
1,9	3,4
3,4	1,9
4,4	1,6
6,6	1,1
9,7	0,8
13,1	0,6
14,5	0,5
15,4	0,5
17,5	0,4
23,8	0,3

> 30
> 28
> 26
> 22

> 90

2,1
4,2
6,3
34
8

drum drum
100 500
100 500
PD100 PD500
- -



RG/U COAXES

acc. to MIL-C-17 Specs.

Application HF Transmission; Wireless Local Area Network (WLAN); Instrumentation cabling; VHF-UHF Radio Cabling; Automotive
 Standards MIL-C-17
 Fire-Resistance Rating Jacket PVC II: IEC EN 60332-1-2; ZH: IEC EN 60332-3-24; EN 60754; EN 61034

CAVEL CODE

RG/U Ref.

CONSTRUCTION DATA

		RG174A/U RG174A/U ZHN 119F	RG58C/U RG58C/U ZHN 28C	RG213/U RG213/U ZHN 74C	RG223/U 84A	RG214/U 75E	RG59B/U RG59B/U ZHN 29C
Inner Conductor	Ø mm	7x0,16	19x0,18	7x0,75	0,90	2,25	0,58
	material	FeCu	CuSn	Cu	CuAg	CuAg	FeCu
Dielectric	Ø mm	1,50	2,95	7,25	2,95	7,25	3,70
	material	PE	PE	PE	PE	PE	PE
Screen							
1. Braid	material	CuSn	CuSn	Cu	CuAg	CuAg	Cu
Braid Optical Coverage	%	87	93	96	95	95	94
2. Braid							
Braid Optical Coverage	%				96	97	
	Ø mm	1,90	3,43	7,97	3,97	8,53	4,30

Outer Sheath

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Ø mm		2,80	5,00	10,30	5,40	10,80	6,15
material		PVC II	PVC II	PVC II	PVC II	PVC II	PVC II
material		LSZH	LSZH	LSZH			LSZH

PHYSICAL DATA

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Copper Content	kg/km	4,6	16,6	73,9	36,2	121,3	19,7
Cable Weigth	kg/km	11,8 12,5	35,9 38,3	151,3 160,6	55,7 30/60	200,7 50/100	51,4 54,1
Min. Bending Radius 1/n	mm	15/30	25/50	50/100	30/60	30/60	30/60
Max. Tensile Strength	N	120	90	400	100	500	200
Fire Load	MJ/km	168 160	536 546	2.457 2.495	565	3.080	849 851
	kWh/km	47 44	149 152	683 693	157	856	236 236

ELECTRICAL DATA

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Impedance	Ohm	50 ±2	50 ±2	50 ±2	50 ±2	50 ±2	75 ±3
Capacitance	pF/m	101 ±2	100 ±2	100 ±2	101 ±2	100 ±2	66 ±2
Velocity Ratio	%	66	66	66	66	66	66
Attenuation (at 20°C)							
@ 50 MHz	dB/100m	20,0	10,7	4,1	9,2	4,5	7,7
@ 200 MHz	dB/100m	42,5	23,5	9,0	19,0	10,0	16,0
@ 300 MHz	dB/100m	51,0	29,6	11,3	24,0	12,5	19,9
@ 470 MHz	dB/100m	63,0	38,7	14,8	31,0	17,0	25,4
@ 800 MHz	dB/100m	82,9	53,4	20,4	40,0	22,5	34,0
@ 1000 MHz	dB/100m	97,0	61,1	23,6	45,0	26,0	38,7

Structural Return Loss (SRL)

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
@ 30 - 300 MHz	dB	> 21	> 26	> 27	> 26	> 23	> 28
@ 300 - 600 MHz	dB	> 19	> 25	> 26	> 24	> 22	> 25
@ 600 - 1000 MHz	dB	> 18	> 24	> 24	> 23	> 20	> 23

Transfer Impedance (Zt)

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
@ 5 - 30 MHz	mΩ/m	11	8	8	< 0,9	< 0,9	15

Screening Attenuation (SA)

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
@ 30 - 1000 MHz	dB	> 55	> 50	> 55	> 90	> 85	> 45

DC Resistance inner/outer

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Loop Resistance	Ohm/km	290 / 42	38,5 / 16,5	5,5/ 4,5	28 / 6,5	5,5 / 4,5	158 / 11

Loop Resistance

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Maximum Power	Ohm/km	332,0	55,0	10,0	34,5	10,0	169,0

Maximum Power

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
@ 100 MHz	W	50	200	830	400	1000	300
@ 400 MHz	W	25	60	320	200	500	135
@ 1000 MHz	W	15	35	180	120	200	75

Sheath Insulation Voltage

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
STANDARD PACKING	kV	2	5	5	5	5	3

STANDARD PACKING

		RG174A/U	RG58C/U	RG213/U	RG223/U	RG214/U	RG59B/U
Put-Up	mode	pl. reel	coil	pl. reel	drum	drum	coil
Unit Length	m	100	150	100	500	500	100
Unit Packing Content	m	500	900	200	500	500	600
Packing Pattern (look at page ?)	mod.	R100S	S150M	R100L	PD500	WD500	S100M
Fits CABLEBOX	item	-	DS100	DS250	-	-	DS100

mod. S100M
6 x 100 m shrunk coils in box = 600 m

mod. S150M
6 x 150 m shrunk coils in box = 900 m

fit CABLEBOX DS100



M

mod. R100S
5 x 100 m plastic reels in box = 500 m



S

mod. R100M
5x100m plastic reels in box = 500 m

fit CABLEBOX DS100



M

mod. R100L
2x100m shrunk coils in box = 200 m
mod. R200L
2x200m shrunk coils in box = 400 m

fit CABLEBOX DS250



L

mod. PD
1x100 m o 1x500 m plywood drums



PD

mod. WD
1x500 m wooden drums



WD



CAVEL



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CERTIFIED COMPANY
WILL EN ISO 9001:2008
CERT. NO. 9129-ICOM



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