



# COAXIAL CABLES

aerospace industry Video systems  
Telecommunications Radio/television  
Various types of measuring equipment  
Medical devices computer systems  
Military equipment and  
weapon systems

## RoHS COMPLIANT



In order to meet the 2002/95/CEE European Directive, AXON' CABLE has replaced their high strength silver plated copper alloy conductors (SPTF) with a silver plated copper alloy conductor (SCA) with equivalent performance but heavy metal free. The AXON' SCA conductors do not contain cadmium. They are RoHS compliant.

## SPECIAL VERSIONS

### PICO-COAX®

#### FLEXIBLE MINIATURE COAXIAL CABLES

- Flexible miniature coaxial cables offering a good compromise between a small diameter (e.g. < 0.2 mm) and a capacitance of 50 to 100 pF/m.
- Laying up of more than 500 PICO-COAX® into MULTI-PICO-COAX® cables.
- Manufacture of harnesses : MULTIPICO-COAX® cables can be terminated by different types of connectors.
- Application : e.g. transducer probe cables (medical imaging,...).

*For more detailed information, please ask for our "PICO-COAX®" brochure.*

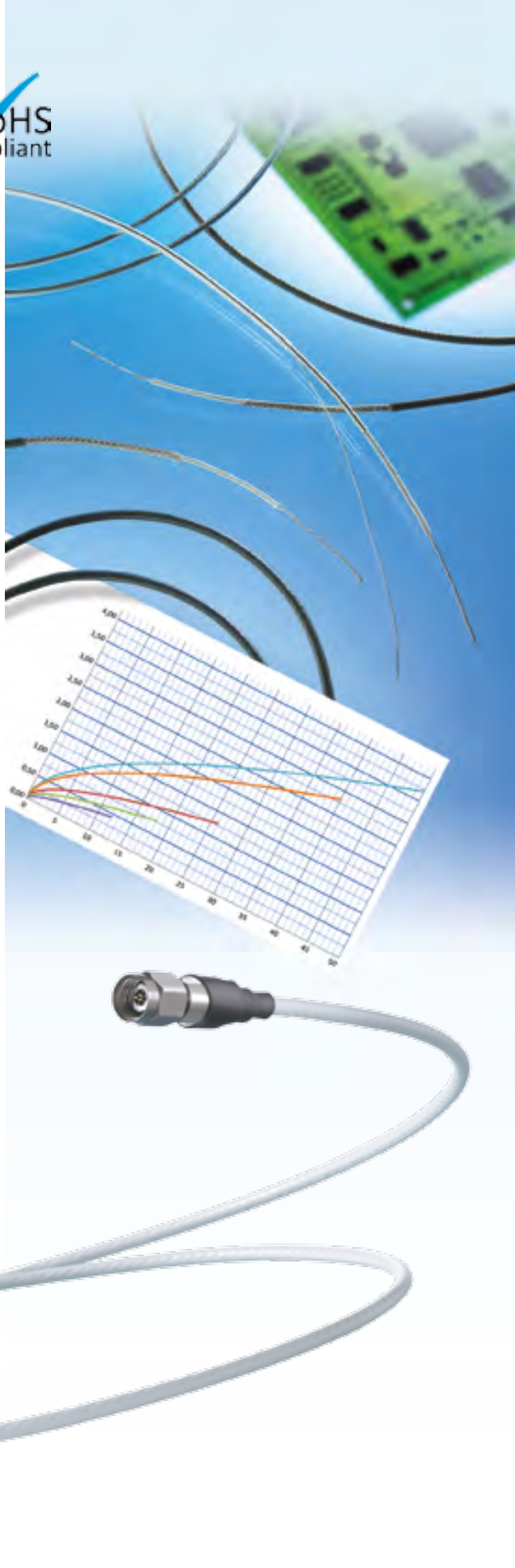
### AXOWAVE

#### FLEXIBLE LOW LOSS MICRO ASSEMBLIES

- The use of CELLOFLON® dielectrics makes it possible to manufacture very low loss microwave assemblies (e.g. AXOWAVE 8N :  $\varnothing$  8.0 mm,  $\alpha \leq 0.80$  dB at 18 GHz) which can be used at high frequencies (up to 50 GHz).
- These assemblies are terminated with SMA, N, TNC type or metric connectors depending on the type of cable.

*AXOWAVE datasheets show the detailed characteristics of the whole standard product range.*

*Any special request can be studied.*



## TECHNICAL GLOSSARY



### CHARACTERISTIC IMPEDANCE

Term representing the relationship between the voltage and current in a cable of supposedly infinite length. There are three main classes of characteristic impedance for coaxial cables : 50 Ω, 75 Ω and 95 Ω.

The formula defining characteristic impedance may be written as follows :

$$Z_c = \frac{138.2}{\sqrt{\epsilon}} \cdot \log_{10} \frac{D}{d} \text{ in } \Omega$$

### CAPACITANCE

Property of a coaxial cable to store electric charge when a difference in potential energy exists between the two conductors. This will depend on the geometry of the cable and on the nature of the insulation and may be defined as follows :

$$C = \frac{24,12 \cdot \epsilon}{\log_{10} \frac{D}{d}} \text{ or } \frac{3326 \cdot \sqrt{\epsilon}}{Z_c} \text{ in pF/m}$$

### VELOCITY OF PROPAGATION

This is the speed that the electrical signal travels through in the dielectric.

$$V_p = \frac{1}{\sqrt{\epsilon}} \times 100 \text{ as a \% of the speed of the light}$$

Ex.: solid polyethylene  $v_p = 66 \%$   
solid PTFE  $v_p = 69 \%$

As the dielectric constant of an insulation is a direct function of the nature of this insulation, in order to increase the velocity of propagation we must decrease the dielectric constant and bring it as close as possible to the dielectric constant of air ( $\epsilon = 1$ ).

Ex.: dielectric constant    ETFE = 2.6  
                                      PTFE = 2.1  
                                      Celloflon® = 1.3 to 2.1

### ATTENUATION

Attenuation is the sum of losses in the conductor and in the dielectric which determines the exponential loss occurring to a signal during a transmission in a cable. Attenuation may be expressed as follows :

$$A = \frac{1.43 R}{Z_c} + 9.15 \cdot \sqrt{\epsilon} \cdot f \cdot F$$

in dB/100 m at frequency range

where

$$R = 25.4 \left( \frac{1}{d} + \frac{1}{D} \right) \cdot \sqrt{f}$$

D = diameter of dielectric in mm  
d = diameter of central conductor in mm  
ε = dielectric constant  
Z<sub>c</sub> = characteristic impedance of the dielectric in Ω  
C = capacitance per unit length in pF/m  
v<sub>p</sub> = velocity of propagation as a % of the speed of light  
A = attenuation in dB/100 m at frequency range  
R = conductor resistance at a frequency f  
F = loss factor tg δ  
f = frequency in MHz

## COAXIAL CABLES

The use of coaxial cables extends to every application in which a signal must have a minimum distortion and attenuation or where elimination of external interference plays a leading part.

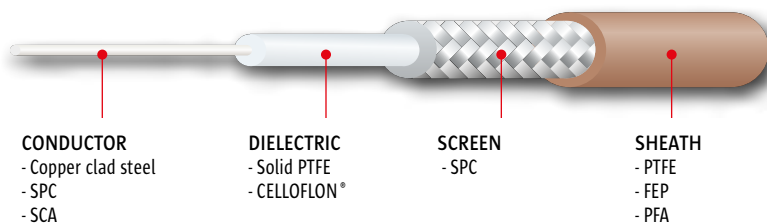
The use of a coaxial cable helps to prevent many of the problems created by bifilary wires : the twin conductor construction of coaxials (central conductor and shield) separated by a dielectric prevents the reception of outside interference, and at the same time, the loss of the electromagnetic wave.

Different types of coaxials are determined by the materials employed (conductors and dielectrics), the outer diameter, the characteristic impedance, the capacitance, the attenuation and the frequency range.

The most widely used coaxial cables are those according to the American norm MIL-DTL-17, the RG (Radio Frequency Government) references and the French norm NF-C 93550, KX references.

## THE DESIGN

AXON' coaxial cables can be composed of the following materials :



### CELLOFLON®

For small, flexible, high performance coaxial cables AXON' has taken out a patent on CELLOFLON® (porous PTFE). This material presents an 80% porosity, a density of 0.42 and a dielectric constant of 1.18 (solid PTFE :

density = 2.2 - dielectric constant = 2.1).

The use of CELLOFLON® helps to manufacture lighter, smaller, more flexible cables with better electrical characteristics. As the dielectric constant will be lower, there will be fewer losses, and the cut-off frequency and the velocity of propagation will be higher.

## LEGENDS

**PTFE** = Polytetrafluorethylene

**ETFE** = Etylenetetrafluorethylene

**FEP** = Fluorethylenepropylene

**PFA** = Perfluoralkoxy

**CELLOFLON®** = porous PTFE

**SPC** = Silver plated copper

**SCA** = Silver plated copper alloy

**SCWS** = Silver plated copper clad soft steel

**SPTF** = Non magnetic silver plated copper alloy

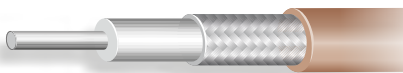
**SCWH** = Silver plated copper clad hard steel

**SPCI** = Silver plated copper alloy

**SPCA** = Silver plated copper clad aluminium



# SINGLE SCREEN

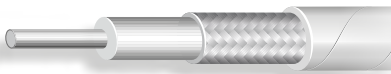


## FEP SHEATH

| CABLE<br>REFERENCE                   | CONDUCTOR |                   |                   | DIELECTRIC       |                   | SCREEN   | OUTER SHEATH |                   | MAX.            |                       | MAX.                  | MAX.                           | CONNECTOR<br>SERIES<br>USED                         |
|--------------------------------------|-----------|-------------------|-------------------|------------------|-------------------|----------|--------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------------|---|
|                                      | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL         | NOM.<br>Ø<br>(mm) | MATERIAL | MATERIAL     | MAX.<br>Ø<br>(mm) | WEIGHT<br>(g/m) | Z <sub>c</sub><br>(Ω) | CAPACITANCE<br>(pF/m) | ATTEN. AT<br>400 MHz<br>(dB/m) |   |
| M17/93-RG 178(*)<br>or KX 21 A (**)  | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC      | FEP          | 1.90              | 9.30            | 50                    | 105                   | 1.08                           | BNC-N-<br>SM-SMA-SMB-SMC                            |
| M17/94-RG 179(*)                     | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 1.60              | SPC      | FEP          | 2.66              | 16.07           | 75                    | 75.5                  | 0.69                           | BMA-BNC-MHV-N-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS       |
| M17/95-RG 180(*)                     | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 2.60              | SPC      | FEP          | 3.68              | 29.46           | 95                    | 57                    | 0.55                           | BNC-C-MHV-N-<br>SM-SMA-SMB-SMC-<br>SMD-TNC-TPS      |
| M17/110(*)<br>RG 302/U               | SCWH      | 1 x 0.64          | 0.64              | EXTRUDED<br>PTFE | 3.70              | SPC      | FEP          | 5.25              | 59.52           | 75                    | 72                    | 0.26                           | BN-BNC-C-HN-MHV-<br>N-QDS-SC-SM-SMA-<br>TNC-TPS-UHF |
| M17/111-RG 303(*)<br>M17/170-00001   | SCWH      | 1 x 0.94          | 0.94              | EXTRUDED<br>PTFE | 2.95              | SPC      | FEP          | 4.44              | 58.03           | 50                    | 105                   | 0.28                           | BN-BNC-C-HN-MHV-<br>N-SC-SM-SMA-<br>TNC-TPS-UHF     |
| M17/113-RG 316(*)<br>or KX 22 A (**) | SCWS      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC      | FEP          | 2.59              | 18.15           | 50                    | 105                   | 0.69                           | BMA-BNC-MHV-<br>N-SMA-SMB-SMC-<br>SMD-TNC-TPS       |
| M17/169-00001(*)                     | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC      | WHITE<br>FEP | 1.90              | 9.30            | 50                    | 105                   | 1.08                           | BNC-N-SM-SMA<br>SMB-SMC                             |
| M17/172-00001(*)                     | SCWS      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC      | WHITE<br>FEP | 2.59              | 17.11           | 50                    | 105                   | 0.68                           | BMA-BNC-MHV-N-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS       |
| RG 400 ST                            | SPC       | 19 x 0.20         | 0.97              | EXTRUDED<br>PTFE | 2.95              | SPC      | FEP          | 4.20              | Nom.<br>42.00   | 50                    | NOM.<br>96            | 0.40                           | BMA-BN-BNC-C-HN-<br>MHV-N-SM-SMA-<br>TNC-TPS-UHF    |

Equivalent to : (\*) MIL-DTL-17, (\*\*) NF-C-93550

## PTFE SHEATH



| CABLE<br>REFERENCE | CONDUCTOR |                   |                   | DIELECTRIC       |                   | SCREEN   | OUTER SHEATH  |                   | NOM.            |                       | MAX.                  | MAX.                           | CONNECTOR<br>SERIES<br>USED                      |
|--------------------|-----------|-------------------|-------------------|------------------|-------------------|----------|---------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------------|--|
|                    | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL         | NOM.<br>Ø<br>(mm) | MATERIAL | MATERIAL      | MAX.<br>Ø<br>(mm) | WEIGHT<br>(g/m) | Z <sub>c</sub><br>(Ω) | CAPACITANCE<br>(pF/m) | ATTEN. AT<br>400 MHz<br>(dB/m) |  |
| RG 187 A/U         | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 1.60              | SPC      | TAPED<br>PTFE | 2.79              | 16.20           | 75                    | 72.5                  | 0.69                           | BMA-BNC-MHV-N-<br>SM-SMA-SMB-SMC-<br>SMD-TNC-TPS |
| RG 188/U           | SCWH      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC      | TAPED<br>PTFE | 2.79              | 16.20           | 50                    | 105                   | 0.69                           | BMA-BNC-MHV-N-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS    |
| RG 188 A/U         | SCWS      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC      | TAPED<br>PTFE | 2.79              | 16.20           | 50                    | 105                   | 0.69                           | BMA-BNC-MHV-N-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS    |
| RG 195/U           | SCWH      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 2.60              | SPC      | TAPED<br>PTFE | 3.93              | 28.70           | 95                    | 51                    | 0.55                           | BNC-C-MHV-N-SM-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS   |
| RG 195 A/U         | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 2.60              | SPC      | TAPED<br>PTFE | 3.93              | 28.70           | 95                    | 51                    | 0.55                           | BNC-C-MHV-N-SM-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS   |
| RG 196/U           | SCWH      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC      | TAPED<br>PTFE | 2.03              | 9.00            | 50                    | 105                   | 0.95                           | BNC-N-SM-SMA-<br>SMB-SMC-SMD-TNC                 |
| RG 196 A/U         | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC      | TAPED<br>PTFE | 2.03              | 9.00            | 50                    | 105                   | 0.95                           | BNC-N-SM-SMA-<br>SMB-SMC-SMD-TNC                 |

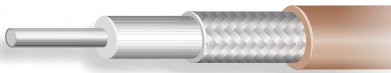
### CONSTRUCTION

- Conductor :
  - silver plated copper clad soft steel,
  - silver plated copper clad hard steel,
- Dielectric : extruded PTFE.
- Velocity of propagation : 69 %.
- Screen :
  - silver plated copper.
- Sheath :
  - white taped PTFE.

### CHARACTERISTICS

Excellent resistance of the dielectric or the outer jacket of the cable to the soldering iron.

## PFA SHEATH



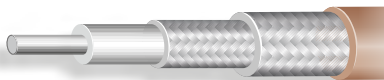
| CABLE<br>REFERENCE    | CONDUCTOR |                   |                   | DIELECTRIC       |                   | SCREEN   | OUTER SHEATH    |                   | MAX.             |                       | MAX.                  | MAX.                           | CONNECTOR<br>SERIES<br>USED                    |
|-----------------------|-----------|-------------------|-------------------|------------------|-------------------|----------|-----------------|-------------------|------------------|-----------------------|-----------------------|--------------------------------|--|
|                       | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL         | NOM.<br>Ø<br>(mm) | MATERIAL | MATERIAL        | NOM.<br>Ø<br>(mm) | WEIGHT.<br>(g/m) | Z <sub>c</sub><br>(Ω) | CAPACITANCE<br>(pF/m) | ATTEN. AT<br>400 MHz<br>(dB/m) |  |
| M17/93-<br>00001 (*)  | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC      | EXTRUDED<br>PFA | 1.90              | 9.30             | 50                    | 105                   | 1.08                           | BNC-N-<br>SM-SMA-SMB-SMC                       |
| M17/136-<br>00001 (*) | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 1.60              | SPC      | EXTRUDED<br>PFA | 2.66              | 17.85            | 75                    | 72                    | 0.69                           | BMA-BNC-MHV-<br>N-SMA-SMB-SMC-<br>SMD-TNC-TPS  |
| M17/137-<br>00001 (*) | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 2.60              | SPC      | EXTRUDED<br>PFA | 3.68              | 29.76            | 95                    | 51                    | 0.56                           | BNC-C-MHV-N-<br>SM-SMA-SMB-SMC-<br>SMD-TNC-TPS |
| M17/138-<br>00001 (*) | SCWS      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC      | EXTRUDED<br>PFA | 2.59              | 18.15            | 50                    | 105                   | 0.68                           | BMA-BNC-MHV-N-<br>SMA-SMB-SMC-<br>SMD-TNC-TPS  |

Equivalent to : (\*) MIL-DTL-17

### CONSTRUCTION

- Conductor :
  - silver plated copper clad soft steel.
- Dielectric : extruded PTFE.
- Velocity of propagation : 69 %.
- Screen :
  - silver plated copper.
- Sheath :
  - light brown extruded PFA.

DOUBLE  
SCREEN

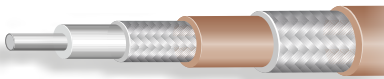


FEP SHEATH

| CABLE<br>REFERENCE                            | CONDUCTOR |                   |                   | DIELECTRIC       |                   | SCREENS |     | OUTER SHEATH    |                   | MAX.<br>WEIGHT<br>(g/m) | z <sub>c</sub><br>(Ω) | MAX.<br>CAPA-<br>CITANCE<br>(pF/m) | MAX.<br>ATTEN. AT<br>400 MHz<br>(dB/m) | CONNECTOR<br>SERIES<br>USED                       |
|---|-----------|-------------------|-------------------|------------------|-------------------|---------|-----|-----------------|-------------------|-------------------------|-----------------------|------------------------------------|--|---|
|   | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL         | NOM.<br>Ø<br>(mm) | 1       | 2   | MATERIAL        | MAX.<br>Ø<br>(mm) |                         |                       |                                    |  |   |
| P500955                                       | SCWS      | 7x 0.10           | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC     | SPC | EXTRUDED<br>FEP | 2.30              | 13.70                   | 50                    | 105                                | 1.08                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS-UHF |
| P530912                                       | SCWS      | 7x 0.17           | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC     | SPC | EXTRUDED<br>FEP | 2.70              | 16.80                   | 50                    | 105                                | 0.69                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS-UHF |
| M17/152<br>00001(*)                           | SCWS      | 7x 0.17           | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC     | SPC | EXTRUDED<br>FEP | 2.99              | 27.53                   | 50                    | 105                                | 0.78                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS     |
| M17/60<br>RG142(*)<br>M17/158<br>00001(*)     | SCWH      | 1x 0.94           | 0.94              | EXTRUDED<br>PTFE | 2.95              | SPC     | SPC | EXTRUDED<br>FEP | 5.08              | 83.33                   | 50                    | 105                                | 0.38                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS-UHF |
| M17/128<br>RG400 DT(*)<br>M17/175<br>00001(*) | SPC       | 19x 0.20          | 0.97              | EXTRUDED<br>PTFE | 2.95              | SPC     | SPC | EXTRUDED<br>FEP | 5.08              | 74.40                   | 50                    | 105                                | 0.34                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS-UHF |
| M17/127<br>RG393                              | SPC       | 7x 0.79           | 2.37              | EXTRUDED<br>PTFE | 7.24              | SPC     | SPC | EXTRUDED<br>FEP | 10.16             | 260.00                  | 50                    | 105                                | 0.16                                   | BMA-BN-BNC-C<br>HN-MHV-N-SC-SM<br>SMA-TNC-TPS-UHF |

Equivalent to : (\*) MIL-DTL-17

TRIAXIALS



| CABLE<br>REFERENCE                | CONDUCTOR |                   |                   | DIELECTRIC       |                   | FIRST<br>SCREEN | INTERNAL<br>SCREEN | SECOND<br>SCREEN | OUTER<br>SHEATH |                   | NOM.<br>WEIGHT<br>(g/m) | z <sub>c</sub><br>(Ω) | NOM.<br>CAPACITANCE<br>(pF/m) |                   | MAX.<br>ATTEN.<br>AT<br>400 MHz<br>(dB/m) | CONNECTOR<br>SERIES<br>USED |
|-----------------------------------|-----------|-------------------|-------------------|------------------|-------------------|-----------------|--------------------|------------------|-----------------|-------------------|-------------------------|-----------------------|-------------------------------|-------------------|---|-----------------------------|
|                                   | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL         | NOM.<br>Ø<br>(mm) | MATERIAL        | MATERIAL           | MATERIAL         | MATERIAL        | Ø<br>MAX.<br>(mm) |                         |                       | COND./<br>SCREEN              | SCREEN/<br>SCREEN |   |                             |
| SM X 50                           | SCA       | 1 x 0.16          | 0.16              | EXTRUDED<br>PTFE | 0.52              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 1.70              | 6.80                    | 50                    | 96                            | 480               | -   | TRIAXIAL<br>CONNECTORS      |
| RG X 179                          | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 1.60              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 3.80              | 31.60                   | 75                    | 66                            | 530               | 0.69                                      | TRIAXIAL<br>CONNECTORS      |
| RG X 180<br>M17/177-<br>00001 (*) | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 2.60              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 4.80              | 50.80                   | 95                    | MAX.<br>57                    | 980               | 0.56                                      | TRIAXIAL<br>CONNECTORS      |
| RG X 316                          | SCWS      | 7 x 0.17          | 0.51              | EXTRUDED<br>PTFE | 1.52              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 3.70              | 32.20                   | 50                    | 96                            | 490               | 0.69                                      | TRIAXIAL<br>CONNECTORS      |
| RG X 400                          | SPC       | 19 x 0.20         | 0.97              | EXTRUDED<br>PTFE | 2.95              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 5.40              | 67.20                   | 50                    | 96                            | 798               | 0.28                                      | TRIAXIAL<br>CONNECTORS      |
| M17/131<br>RG 403 (*)             | SCWS      | 7 x 0.10          | 0.30              | EXTRUDED<br>PTFE | 0.85              | SPC             | EXTRUDED<br>FEP    | SPC              | EXTRUDED<br>FEP | 3.25              | 22.30                   | 50                    | 96                            | MAX.<br>525       | 0.95                                      | TRIAXIAL<br>CONNECTORS      |

Equivalent to : (\*) MIL-DTL-17

CELLOFLON® DIELECTRIC

| CABLE<br>REFERENCE | CONDUCTOR |                   |       | CELLOFLON®<br>DIELECTRIC | DOUBLE<br>SCREEN | OUTER SHEATH<br>(g/m) |                | NOM.<br>WEIGHT<br>(g/m) | z <sub>c</sub><br>(Ω) | MAX.<br>CAPA-<br>CITANCE<br>(pF/m) | MAX.<br>ATTEN.                       |   | CONNECTOR<br>SERIES<br>USED  |
|--------------------|-----------|-------------------|-------|--------------------------|------------------|-----------------------|----------------|-------------------------|-----------------------|------------------------------------|--------------------------------------|---|--|
|                    | MATERIAL  | CONS-<br>TRUCTION | NOM.Ø | Ø (mm)                   | MATERIAL         | MATERIAL              | Ø MAX.<br>(mm) |                         |                       |                                    | dB/m                                 | FREQUENCY                                 |  |
| P812817            | SPC       | 19 x 0.102        | 0.51  | 1.35                     | SPC              | FEP                   | 2.40           | 13                      | 50                    | 100                                | 0.50                                 | 200 MHz                                   | SMA size 16 coaxial<br>contacts for connectors<br>according to MIL-C-38999 |
| P805311            | SPC       | 19 x 0.160        | 0.80  | 2.10                     | SPC              | FEP                   | 3.05           | 20                      | 50                    | 85                                 | 0.77<br>1.14<br>1.40<br>1.60<br>2.60 | 1 GHz<br>2 GHz<br>3 GHz<br>5 GHz<br>8 GHz | SMA size 16 coaxial<br>contacts for connectors<br>according to MIL-C-38999 |
| P803859            | SCWS      | 7 x 0.102         | 0.30  | 1.30                     | SPC              | FEP                   | 2.40           | 12                      | 75                    | 60                                 | 0.30<br>0.65                         | 200 MHz<br>400 MHz                        | SMA size 16 coaxial<br>contacts for connectors<br>according to MIL-C-38999 |
| P804298            | SCA       | 7 x 0.102         | 0.30  | 1.35                     | SPC              | FEP                   | 2.50           | 15                      | 75                    | 60                                 | 0.50                                 | 200 MHz                                   | SMA size 16 coaxial<br>contacts for connectors<br>according to MIL-C-38999 |
| P804151            | SPC       | 19 x 0.102        | 0.51  | 2.30                     | SPC              | FEP                   | 3.70           | 35                      | 75                    | 60                                 | 0.30                                 | 400 MHz                                   | SMA size 8 coaxial<br>contacts for connectors<br>according to MIL-C-38999  |

Equivalent to : (\*) MIL-DTL-17

CONSTRUCTION

- Conductor :
  - silver plated copper clad soft steel,
  - silver plated copper clad hard steel,
  - silver plated copper.
- Dielectric : extruded PTFE.
- Velocity of propagation : 69 %.
- Screens :
  - silver plated copper.
- Sheath :
  - light brown extruded FEP.

CONSTRUCTION

- Conductor :
  - non magnetic silver plated copper alloy,
  - silver plated copper,
  - silver plated copper clad soft steel.
- Dielectric : extruded PTFE,
- Propagation velocity : 69%
- Screen : silver plated copper
- Internal sheath : extruded FEP
- Outer sheath : extruded FEP.

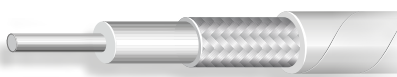
CHARACTERISTICS

- Better mechanical protection in a flexible cable.
- The “screen-sheath-shield” construction assures a much better electrical shielding than two sheathed screens.

APPLICATIONS

- All equipment where outside interference must be minimized.
- Propagation of two different signals,  
E.g. : Probe leads,  
Transducer leads.

## LOW NOISE VERSIONS



### CONSTRUCTION

- Conductor :
  - non magnetic silver plated copper alloy,
  - silver plated copper clad soft steel.
- Dielectric : extruded PTFE / graphite.
- Velocity of propagation : 69 %.
- Low noise coating
- Screen : silver plated copper.
- Sheath : white PTFE tape  
(except SM L 50 : blue PTFE tape), extruded light brown FEP.

### CHARACTERISTICS

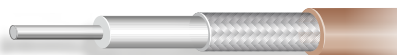
- The application of a semiconducting layer of graphite between the core and the screen enables a decrease in audio noise due to oscillations, vibrations, etc., in some cases by as much as 2000 times.
- This semiconducting layer does not change the dielectric properties of the cable.
- The cable also has excellent soldering properties (except M 17/132 - RG 404).

| CABLE REFERENCE | CONDUCTOR |                |             | DIELECTRIC    |             | SCREEN   | OUTER SHEATH |             | Nom. WEIGHT (g/m) | $z_c$ ( $\Omega$ ) | MAX. CAPACITANCE (pF/m) | Nom. ATTEN. AT 400 MHz (dB/m) | CONNECTOR SERIES USED                    |
|-----------------|-----------|----------------|-------------|---------------|-------------|----------|--------------|-------------|-------------------|--------------------|-------------------------|-------------------------------|--|
|                 | MATERIAL  | CONS. TRUCTION | NOM. Ø (mm) | MATERIAL      | NOM. Ø (mm) | MATERIAL | MATERIAL     | MAX. Ø (mm) |                   |                    |                         |                               |  |
| SM L 50         | SCA       | 1 x 0.16       | 0.16        | EXTRUDED PTFE | 0.52        | SPC      | TAPED PTFE   | 1.10        | 3.00              | 50                 | 97 NOM.                 | 1.10 NOM. (AT 200 MHz)        | SUBMINIATURE CONNECTORS                  |
| RG L 187        | SCWS      | 7 x 0.10       | 0.30        | EXTRUDED PTFE | 1.60        | SPC      | TAPED PTFE   | 2.79        | 16.20             | 75                 | 72.5                    | 0.90                          | BMA-BNC-MHV-N-SM-SMA-SMB-SMC-SMD-TNC-TPS |
| RG L 188        | SCWS      | 7 x 0.17       | 0.51        | EXTRUDED PTFE | 1.52        | SPC      | TAPED PTFE   | 2.79        | 16.20             | 50                 | 105                     | 0.90                          | BMA-BNC-MHV-N-SMA-SMB-SMC-SMD-TNC-TPS    |
| RG L 195        | SCWS      | 7 x 0.10       | 0.30        | EXTRUDED PTFE | 2.60        | SPC      | TAPED PTFE   | 3.93        | 28.70             | 95                 | 51                      | 0.65                          | BNC-C-MHV-N-SM-SMA-SMB-SMC-SMD-TNC-TPS   |
| RG L 196        | SCWS      | 7 x 0.10       | 0.30        | EXTRUDED PTFE | 0.85        | SPC      | TAPED PTFE   | 2.03        | 9.00              | 50                 | 105                     | 1.10                          | BNC-N-SM-SMA-SMB-SMC-SMD-TNC             |
| M 17/132 RG 404 | SCWS      | 7 x 0.10       | 0.30        | EXTRUDED PTFE | 0.85        | SPC      | EXTRUDED FEP | 1.95        | 8.30              | 50                 | 105                     | 1.10                          | TNC                                      |

### APPLICATIONS

- high gain audio amplifiers,
- piezoelectric components,
- accelerometers,
- magnetic recording heads,
- oscilloscope probes.

## SUBMINIATURE VERSIONS



### CONSTRUCTION

- Conductor :
  - silver plated copper clad soft steel, single strand
  - silver plated copper clad soft steel
- Dielectric :
  - extruded PTFE (or FEP) for static applications
  - FEP for dynamic applications
- Velocity of propagation : 69%
- Screen or outer conductor :
  - silver plated copper
  - silver plated copper clad aluminium
- Outer sheath : light brown FEP

### CHARACTERISTICS

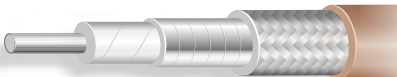
- extremely small diameter,
- excellent flexibility,
- perfect primary wire for multiconductor coaxial cables.

| CABLE<br>REFERENCE   | CONDUCTOR |                   |                   | DIELECTRIC           |                   | SCREEN   | OUTER SHEATH |                   | Nom.<br>WEIGHT<br>(g/m) | z<br>(Ω) | MAX.<br>CAPACITANCE<br>(pF/m) | Nom.<br>ATTEN. AT<br>200 MHz<br>(dB/m) | CONNECTOR<br>SERIES<br>USED |
|----------------------|-----------|-------------------|-------------------|----------------------|-------------------|----------|--------------|-------------------|-------------------------|----------|-------------------------------|--|-----------------------------|
|                      | MATERIAL  | CONS-<br>TRUCTION | NOM.<br>Ø<br>(mm) | MATERIAL             | NOM.<br>Ø<br>(mm) | MATERIAL | MATERIAL     | MAX.<br>Ø<br>(mm) |                         |          |                               |  |                             |
|                      |           |                   |                   | STATIC APPLICATIONS  |                   |          |              |                   |                         |          |                               |  |                             |
| SM 50                | SCA       | 1 x 0.160         | 0.16              | PTFE<br>(or FEP)     | 0.52              | SPC      | FEP          | 1.05              | 2.90                    | 50       | 97                            | 1.15                                   | SUBMINIATURES<br>CONNECTORS |
| SM 75                | SCA       | 1 x 0.102         | 0.10              | PTFE<br>(or FEP)     | 0.55              | SPC      | FEP          | 1.10              | 2.90                    | 75       | 67                            | 0.95                                   | SUBMINIATURES<br>CONNECTORS |
| SM 95                | SCA       | 1 x 0.102         | 0.10              | PTFE<br>(or FEP)     | 0.86              | SPC      | FEP          | 1.50              | 4.80                    | 95       | 51                            | 0.75                                   | SUBMINIATURES<br>CONNECTORS |
|                      |           |                   |                   | DYNAMIC APPLICATIONS |                   |          |              |                   |                         |          |                               |  |                             |
| SM 50 SCA<br>P538394 | SCA       | 7 x 0.063         | 0.19              | FEP                  | 0.52              | SPC      | FEP          | 1.05              | 2.80                    | 50       | 97                            | 1.69                                   | SUBMINIATURES<br>CONNECTORS |
| SM75 SPCI<br>P538432 | SPCI      | 7 x 0.04          | 0.12              | FEP                  | 0.55              | SPC      | FEP          | 1.10              | 2.90                    | 75       | 67                            | 1.69                                   | SUBMINIATURES<br>CONNECTORS |

### APPLICATIONS

- Medical electronics,
- Audio equipment,
- Satellites,
- Miniaturised electronics.

## LIGHTWEIGHT VERSIONS



### CONSTRUCTION

- Conductor
  - silver plated copper clad aluminium
  - silver plated copper
- Dielectric : CELLOFLON® or A-PTFE®
- Velocity of propagation : 75 %, 81% for A-PTFE®
- Screen or outer conductors :
  - silver plated copper
  - silver plated copper clad aluminium
- Outer sheath : extruded FEP

| CABLE REFERENCE       | CONDUCTOR |                |             | DIELECTRIC          |             | TAPE & SCREEN | OUTER SHEATH |             | Nom. WEIGHT (g/m) | $z_c$ ( $\Omega$ ) | MAX. CAPACITANCE (pF/m) | Nom. ATTEN. AT 400 MHz (dB/m) |
|-----------------------|-----------|----------------|-------------|---------------------|-------------|---------------|--------------|-------------|-------------------|--------------------|-------------------------|-------------------------------|
|                       | MATERIAL  | CONS. TRUCTION | NOM. Ø (mm) | MATERIAL            | NOM. Ø (mm) | MATERIAL      | MATERIAL     | MAX. Ø (mm) |                   |                    |                         |                               |
| EN4604-006 WM P546413 | SPC       | 1 x 1.02       | 1.02        | A-PTFE®             | 2.94        | SPC           | FEP          | 4.10        | 40                | 50                 | 82                      | 0.205                         |
| EN4604-010 KX P847400 | SPC       | 1 x 1.40       | 1.40        | EXTRUDED CELLOFLON® | 4.30        | SPC           | FEP          | 5.65        | 80                | 50                 | 88                      | 0.162                         |
| EN4604-009 KW P842357 | SPCA      | 1 x 2.30       | 2.30        | TAPED CELLOFLON®    | 6.20        | SPC SPCA      | FEP          | 7.65        | 95                | 50                 | 88                      | 0.100                         |

### APPLICATIONS

- aircrafts
- helicopters

# SUMMARY OF AXON' STANDARD COAXIAL CABLES

|                     |                 |            | CONDUCTOR |               |       | DIELECTRIC    |       | SCREEN |               |     | OUTER SHEATH |        | Z <sub>c</sub> |
|---------------------|-----------------|------------|-----------|---------------|-------|---------------|-------|--------|---------------|-----|--------------|--------|----------------|
| CABLE REFERENCE     | MIL - DTL-17    | NFC 93-550 | Material  | Construc-tion | nom Ø | Material      | nom Ø | 1      | Triax. sheath | 2   | Material     | Ø max. |                |
| SM50                |                 |            | SCA       | 1 x 0.16      | 0.16  | PTFE          | 0.52  | SPC    |               | -   | FEP          | 1.05   | 50             |
| SML50               |                 |            | SCA       | 1 x 0.16      | 0.16  | GRAPHITE PTFE | 0.52  | SPC    |               | -   | TAPED PTFE   | 1.10   | 50             |
| SMX50               |                 |            | SCA       | 1 x 0.16      | 0.16  | PTFE          | 0.52  | SPC    | FEP           | SPC | FEP          | 1.70   | 50             |
| SM75                |                 |            | SCA       | 1 x 0.102     | 0.10  | PTFE          | 0.55  | SPC    |               | -   | FEP          | 1.10   | 75             |
| SM95                |                 |            | SCA       | 1 x 0.102     | 0.10  | PTFE          | 0.86  | SPC    |               | -   | FEP          | 1.50   | 95             |
| SM50 SCA - P538394  |                 |            | SCA       | 7 x 0.063     | 0.19  | FEP           | 0.5   | SPC    |               | -   | FEP          | 1.05   | 50             |
| SM75 SPCI - P538432 |                 |            | SPCI      | 7 x 0.04      | 0.12  | FEP           | 0.55  | SPC    |               | -   | FEP          | 1.10   | 75             |
| M17/93-RG178        | M17/93-RG178    | KX21       | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | -   | FEP          | 1.90   | 50             |
| M17/169-00001       | M17/169-00001   |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | -   | WHITE FEP    | 1.90   | 50             |
| RG196/U             |                 |            | SCWH      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | -   | TAPED PTFE   | 2.03   | 50             |
| RG196 A/U           |                 |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | -   | TAPED PTFE   | 2.03   | 50             |
| RGL196              |                 |            | SCWS      | 7 x 0.10      | 0.30  | GRAPHITE PTFE | 0.85  | SPC    |               | -   | TAPED PTFE   | 2.03   | 50             |
| M17/132-RG404       | M17/132-RG404   |            | SCWS      | 7 x 0.10      | 0.30  | GRAPHITE PTFE | 0.85  | SPC    |               | -   | FEP          | 1.95   | 50             |
| M17/93-00001        | M17/93-00001    |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | -   | PFA          | 1.90   | 50             |
| RG178DT-P500955     |                 | KX21DT     | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    |               | SPC | FEP          | 2.30   | 50             |
| M17/131-RG403       | M17/131-RG403   |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 0.85  | SPC    | FEP           | SPC | FEP          | 3.25   | 50             |
| M17/94-RG179        | M17/94-RG179    |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 1.60  | SPC    |               | -   | FEP          | 2.66   | 75             |
| M17/136-00001       | M17/136-00001   |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 1.60  | SPC    |               | -   | PFA          | 2.66   | 75             |
| RG187 A/U           |                 |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 1.60  | SPC    |               | -   | TAPED PTFE   | 2.79   | 75             |
| RGL187              |                 |            | SCWS      | 7 x 0.10      | 0.30  | GRAPHITE PTFE | 1.60  | SPC    |               | -   | TAPED PTFE   | 2.79   | 75             |
| RGX179              |                 |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 1.60  | SPC    | FEP           | SPC | FEP          | 3.80   | 75             |
| P803859             |                 |            | SCWS      | 7 x 0.10      | 0.30  | CELLOFLON®    | 1.30  | SPC    |               | SPC | FEP          | 2.40   | 75             |
| P804298             |                 |            | SCA       | 7 x 0.102     | 0.30  | CELLOFLON®    | 1.35  | SPC    |               | SPC | FEP          | 2.50   | 75             |
| M17/95-RG180        | M17/95-RG180    |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 2.60  | SPC    |               | -   | FEP          | 3.68   | 95             |
| M17/137-00001       | M17/137-00001   |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 2.60  | SPC    |               | -   | PFA          | 3.68   | 95             |
| RG195/U             |                 |            | SCWH      | 7 x 0.10      | 0.30  | PTFE          | 2.60  | SPC    |               | -   | TAPED PTFE   | 3.93   | 95             |
| RG195 A/U           |                 |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 2.60  | SPC    |               | -   | TAPED PTFE   | 3.93   | 95             |
| RGL195              |                 |            | SCWS      | 7 x 0.10      | 0.30  | GRAPHITE PTFE | 2.60  | SPC    |               | -   | TAPED PTFE   | 3.93   | 95             |
| RGX180              | M17/177-00001   |            | SCWS      | 7 x 0.10      | 0.30  | PTFE          | 2.60  | SPC    | FEP           | SPC | FEP          | 4.80   | 95             |
| M17/113-RG316       | M17/113-RG316   | KX22       | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | -   | FEP          | 2.59   | 50             |
| M17/172-00001       | M17/172-00001   |            | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | -   | WHITE FEP    | 2.59   | 50             |
| M17/138-00001       | M17/138-00001   |            | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | -   | PFA          | 2.59   | 50             |
| RG188/U             |                 |            | SCWH      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | -   | TAPED PTFE   | 2.79   | 50             |
| RG188 A/U           |                 |            | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | -   | TAPED PTFE   | 2.79   | 50             |
| RGL188              |                 |            | SCWS      | 7 x 0.17      | 0.51  | GRAPHITE PTFE | 1.52  | SPC    |               | -   | TAPED PTFE   | 2.79   | 50             |
| RGX316              |                 |            | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    | FEP           | SPC | FEP          | 3.70   | 50             |
| RG316DT-P530912     |                 | KX22DT     | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | SPC | FEP          | 2.70   | 50             |
| M17/152-00001       | M17/152-00001   | KX22DT     | SCWS      | 7 x 0.17      | 0.51  | PTFE          | 1.52  | SPC    |               | SPC | FEP          | 2.99   | 50             |
| P812817             |                 |            | SPC       | 19 x 0.102    | 0.51  | CELLOFLON®    | 1.35  | SPC    |               | SPC | FEP          | 2.40   | 50             |
| M17/110-RG302/U     | M17/110-RG302/U |            | SCWH      | 1 x 0.64      | 0.64  | PTFE          | 3.70  | SPC    |               | -   | FEP          | 5.25   | 75             |
| P804151             |                 |            | SPC       | 19 x 0.102    | 0.51  | CELLOFLON®    | 2.30  | SPC    |               | SPC | FEP          | 3.70   | 75             |
| M17/111-RG303       | M17/111-RG303   |            | SCWH      | 1 x 0.94      | 0.94  | PTFE          | 2.95  | SPC    |               | -   | FEP          | 4.44   | 50             |
| M17/170-00001       | M17/170-00001   |            | SCWH      | 1 x 0.94      | 0.94  | PTFE          | 2.95  | SPC    |               | -   | FEP          | 4.44   | 50             |
| M17/60-RG142        | M17/60-RG142    |            | SCWH      | 1 x 0.94      | 0.94  | PTFE          | 2.95  | SPC    |               | SPC | FEP          | 5.08   | 50             |
| M17/158-00001       | M17/158-00001   |            | SCWH      | 1 x 0.94      | 0.94  | PTFE          | 2.95  | SPC    |               | SPC | FEP          | 5.08   | 50             |
| P805311             |                 |            | SPC       | 19 x 0.16     | 0.80  | CELLOFLON®    | 2.10  | SPC    |               | SPC | FEP          | 3.05   | 50             |
| M17/128-RG400DT     | M17/128-RG400DT |            | SPC       | 19 x 0.20     | 0.97  | PTFE          | 2.95  | SPC    |               | SPC | FEP          | 5.08   | 50             |
| M17/175-00001       | M17/175-00001   |            | SPC       | 19 x 0.20     | 0.97  | PTFE          | 2.95  | SPC    |               | SPC | FEP          | 5.08   | 50             |
| RG400ST             |                 |            | SPC       | 19 x 0.20     | 0.97  | PTFE          | 2.95  | SPC    |               | -   | FEP          | 4.20   | 50             |
| RGX400              |                 |            | SPC       | 19 x 0.20     | 0.97  | PTFE          | 2.95  | SPC    | FEP           | SPC | FEP          | 5.40   | 50             |
| P533000             | M17/127-RG393   |            | SPC       | 7 x 0.79      | 2.37  | PTFE          | 7.24  | SPC    |               | SPC | FEP          | 9.90   | 50             |



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## AXON' COAXIAL CABLES

### ADVANTAGES

- low dielectric constant,
- low losses,
- weight and space saving,
- high temperature resistance,
- excellent mechanical resistance,
- remarkable chemical inertness,
- good ageing characteristics,
- flexibility.

### APPLICATIONS

- aerospace industry,
- telecommunications,
- radio / television,
- video systems,
- various types of measuring equipment,
- computer systems,
- medical devices : scanners, imaging equipment,
- military equipment and weapon systems.

### QUALITY CONTROL

dimensional, characteristic impedance, capacitance and attenuation tests.

### TECHNICAL BACK-UP

- Terminated coaxial cables : easier installation and significant time saved for the user.
- Harnesses delivered with a Certificate of Test and/or conformity.
- Design of special constructions per customer request.

### CUSTOMER BUYING GUIDE

The items listed below are absolutely essential for us to be able to provide you with the answer to your requirements :

- operating temperature,
- degree of non flammability,
- impedance,
- capacitance,
- maximum permitted attenuation at a given frequency,
- type of connector used,
- application.

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AXON' AGENT



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