

Coax cable for low temperature applications

Type 1: Brass central conductor

Number and type of conductors:

This cable with no outer insulation is available with:

- one single central conductor, varnish insulated
- one central conductor, two strands, uninsulated
- one central conductor, two strands, uninsulated, low noise PE sleeve
- two central conductors, varnish insulated, in twisted pair
- two central conductors, varnish insulated, each in a Teflon sleeve, in twisted pair
- four central conductors, varnish insulated, with four twisted wires

Single wire, single strand GVLZ036

Dimensions:

outer diameter: $\phi 0.65\text{mm}$

Typical composition:

central wire: brass Ms63, $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $8.1\Omega/\text{m}$

Shielding resistance: $5.5\Omega/\text{m}$

Capacity between central wire and shielding (single wire): $63\text{pF}/\text{m}$

Bandwidth: [$\pm 3\text{dB}$, 50Ω Termination]: 0 - 300MHz

Single wire, double strand GVLZ034

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wire: brass Ms63, 2x $\phi 0.1\text{mm}$, uninsulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $4\Omega/\text{m}$

Shielding resistance: $5.5\Omega/\text{m}$

Capacity between central wire and shielding (single wire): $70\text{pF}/\text{m}$

Bandwidth: [$\pm 3\text{dB}$, 50Ω Termination]: 0 – 300MHz

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

Single wire, double strand, low noise GVLZ189

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wire: brass Ms63, 2x $\phi 0.1\text{mm}$, uninsulated

core insulation: Polyethylene (PE)

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $4\Omega/\text{m}$

Shielding resistance: $5.5\ \Omega/\text{m}$

Capacity between central wire and shielding (single wire): $84\ \text{pF}/\text{m}$

Bandwidth: [$\pm 3\text{dB}$, 50Ω Termination]: 0 – 300MHz

Double wire - twisted pair GVLZ033

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wires: brass Ms63, 2x $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $8.1\Omega/\text{m}$

Shielding resistance: $5.5\ \Omega/\text{m}$ (some batches present $4.4\ \Omega/\text{m}$)

Capacity between one central wire and shielding: $70\ \text{pF}/\text{m}$

Capacity between both central wires: $145\ \text{pF}/\text{m}$

Double wire - twisted pair with individual insulation GVLZ141

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wires: brass Ms63, 2x $\phi 0.1\text{mm}$, varnish insulated

core insulation for each wire separately: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $8.1\Omega/\text{m}$

Shielding resistance: $5.5\ \Omega/\text{m}$

Capacity between one central wire and shielding: $62\ \text{pF}/\text{m}$

Capacity between both central wires: $36\ \text{pF}/\text{m}$

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering

Dr George V. Lecomte GmbH

Aachener Str.89, D-52223 Stolberg (Rheinl.)

Tel. +49(0)2402 24566 Fax +49(0)2402 26739

www.GVL-cryoengineering.com

E-mail: GVL-CRYO@T-online.de

Quad wire – double twisted pair high coverage GVLZ224

Dimensions:

outer diameter: approx. $\phi 0.9\text{mm}$

Typical composition:

central wires: 2x $\phi 0.1\text{mm}$ metal, polyimide insulated to $\phi 0.13\text{mm}$

core insulation: Teflon, approx. $\phi 0.65\text{mm}$ od

outer shielding: Constantan (55% Cu, 44% Ni, 1% Mn) braid made of $50\mu\text{m}$ bare wires

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $8.4\Omega/\text{m}$

Shielding resistance: $4.3\Omega/\text{m}$

Capacity between central wire and shielding: 127 pF/m

Capacity between two central wires: 151 pF/m

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering
Dr George V. Lecomte GmbH
Aachener Str.89, D-52223 Stolberg (Rheinl.)

Tel. +49(0)2402 24566
Fax +49(0)2402 26739

www.GVL-Cryoengineering.com
E-mail: GVL-CRYO@T-online.de

Type 2: Superconducting central conductor

Number and type of conductors:

This cable with no outer insulation is available with:

- one single central conductor NbTi/CuNi, varnish insulated
- one single central conductor NbTi/CuNi, uninsulated
- two central conductors NbTi/CuNi in twisted pair, varnish insulated
- two central conductors NbTi in twisted pair, varnish insulated
- two central conductors NbTi in twisted pair, high coverage, varnish insulated
- three central conductors, twisted together, varnish insulated

Single wire GVLZ032

Dimensions:

outer diameter: $\phi 0.65\text{mm}$

Typical composition:

central wire: superconducting NbTi in CuNi matrix (90% Cu, 10% Ni),

ratio NbTi/CuNi : 1/1.5, $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $39 \Omega/\text{m}$

Shielding resistance: $5.5 \Omega/\text{m}$

Capacity between central wire and shielding (single wire): $61 \text{pF}/\text{m}$

Single wire GVLZ137

Dimensions:

outer diameter: $\phi 0.65\text{mm}$

Typical composition:

central wire: superconducting NbTi in CuNi matrix (90% Cu, 10% Ni),

ratio NbTi/CuNi : 1/1.5, $\phi 0.1\text{mm}$, uninsulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $40 \Omega/\text{m}$

Shielding resistance: $5.5 \Omega/\text{m}$

Capacity between central wire and shielding (single wire): $61 \text{pF}/\text{m}$

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering

Dr George V. Lecomte GmbH

Aachener Str.89, D-52223 Stolberg (Rheinl.)

Tel. +49(0)2402 24566

Fax +49(0)2402 26739

www.GVL-cryoengineering.com

E-mail: GVL-CRYO@T-online.de

Double wire - twisted pair GVLZ031

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wire: superconducting NbTi in CuNi matrix (90% Cu, 10% Ni),

ratio NbTi/CuNi : 1/1.5, 2x $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: 41 Ω/m

Shielding resistance: 5.5 Ω/m

Capacity between central wire and shielding (double wire): 60 pF/m

Capacity between both central wires (double wire): 90 pF/m

Triple wire - twisted triplet GVLZ030

Dimensions:

outer diameter: $\phi 0.85\text{mm}$

Typical composition:

central wire: superconducting NbTi in CuNi matrix (90% Cu, 10% Ni),

ratio NbTi/CuNi : 1/1.5, 3x $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: 67 Ω/m

Shielding resistance: 5.5 Ω/m

Capacity between central wire and shielding (triple wire): 60 pF/m

Capacity between two central wires (triple wire): 90 pF/m

Double wire - twisted pair GVLZ217

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wire: superconducting NbTi without matrix, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature (tentative):

Central wire resistance: 85 Ω/m

Shielding resistance: 5.5 Ω/m

Capacity between central wire and shielding (double wire): 60 pF/m

Capacity between both central wires (double wire): 90 pF/m

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

Double wire - twisted pair – high coverage shielding GVLZ223

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wire: superconducting NbTi without matrix, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn) high coverage braid made of 50 μm bare wires

outer insulation: none

Electrical properties at room temperature (tentative):

Central wire resistance: 87 Ω/m

Shielding resistance: 6.3 Ω/m

Capacity between central wire and shielding (double wire): 64 pF/m

Capacity between both central wires (double wire): 93 pF/m

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering

Dr George V. Lecomte GmbH

Aachener Str.89, D-52223 Stolberg (Rheinl.)

Tel. +49(0)2402 24566 Fax +49(0)2402 26739

www.GVL-cryoengineering.com

E-mail: GVL-CRYO@T-online.de

Type 3: Copper central conductor

Number and type of conductors:

This cable with outer insulation is available with:

- two central conductors in twisted pair, varnish insulated

Double wire - twisted pair GVLZ081

Dimensions:

outer diameter: $\phi 1.2\text{mm}$

Typical composition:

central wires: Copper, 2x $\phi 0.15\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: Teflon

Electrical properties at room temperature:

Central wire resistance: $1.1\Omega/\text{m}$

Shielding resistance: $5.5\ \Omega/\text{m}$

Capacity between central wire and shielding (double wire): $70\ \text{pF}/\text{m}$

Capacity between both central wires (double wire): $130\ \text{pF}/\text{m}$

Type 4: Non-magnetic, brass central conductor

Number and type of conductors:

This cable with no outer insulation is available with:

- two central conductors in twisted pair, varnish insulated

Double wire - twisted pair GVLZ169

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wires: brass Ms63, 2x $\phi 0.1\text{mm}$, varnish insulated

core insulation: Teflon

outer shielding: brass Ms63

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $8.1\Omega/\text{m}$

Shielding resistance: $0.56\ \Omega/\text{m}$

Capacity between central wire and shielding (double wire): $70\ \text{pF}/\text{m}$

Capacity between both central wires (double wire): $145\ \text{pF}/\text{m}$

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

Type 5: Low-noise, CuNi central conductor

Number and type of conductors:

This cable with no outer insulation is available with:

- one central conductor

This cable is made with a special process leading to differences in batch properties. We have it currently in two versions, indicated B2 and B3.

Single wire, single strand GVLZ185

Dimensions:

outer diameter: $\phi 0.60\text{mm}$

Typical composition:

central wire: CuNi (70% Cu, 30% Ni) $\phi 0.09\text{mm}$ (B2) or $\phi 0.12\text{mm}$ (B3)

core insulation: Graphite loaded

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn) high coverage

outer insulation: none

Electrical properties at room temperature:

Central wire resistance: $60\Omega/\text{m}$ (B2) or $32\Omega/\text{m}$ (B3)

Shielding resistance: $2.8\ \Omega/\text{m}$

Capacity between central wire and shielding: $105\ \text{pF}/\text{m}$ (B2) or $81\ \text{pF}/\text{m}$ (B3)

Type 6: Manganin central conductor

Number and type of conductors:

This cable with no outer insulation is available with:

- two central conductors in twisted pair, varnish insulated

Double wire - twisted pair low noise GVLZ215

Dimensions:

outer diameter: $\phi 0.8\text{mm}$

Typical composition:

central wires: Manganin, $2 \times \phi 0.127\text{mm}$, varnish insulated

core insulation: Polyethylene (PE)

outer shielding: CuNi (55% Cu, 44% Ni, 1% Mn)

outer insulation: none

Electrical properties at room temperature (tentative):

Central wire resistance: $34\Omega/\text{m}$

Shielding resistance: $5.5\ \Omega/\text{m}$

Capacity between central wire and shielding (double wire): $84\ \text{pF}/\text{m}$

Capacity between both central wires (double wire): $148\ \text{pF}/\text{m}$

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering

Dr George V. Lecomte GmbH

Aachener Str.89, D-52223 Stolberg (Rheinl.)

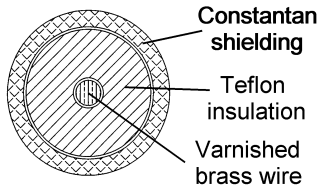
Tel. +49(0)2402 24566 Fax +49(0)2402 26739

www.GVL-cryoengineering.com

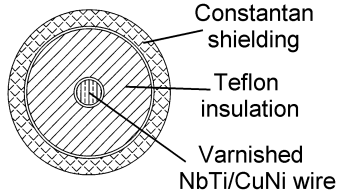
E-mail: GVL-CRYO@T-online.de

Coax cable for low temperature - Summary

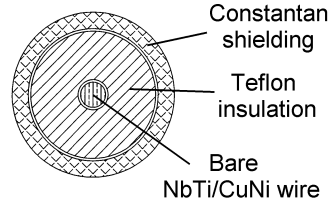
GVLZ036



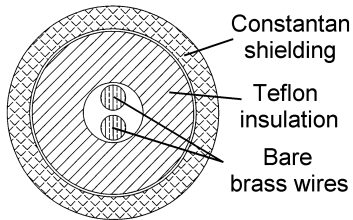
GVLZ032



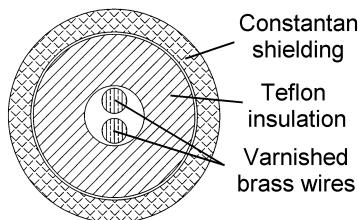
GVLZ137



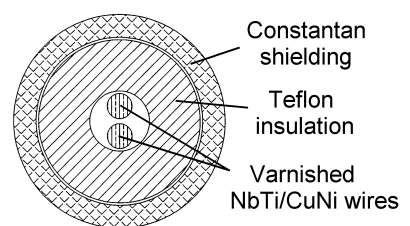
GVLZ034



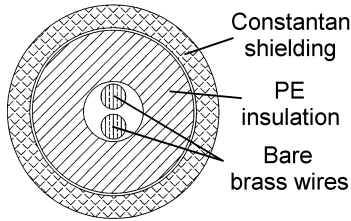
GVLZ033



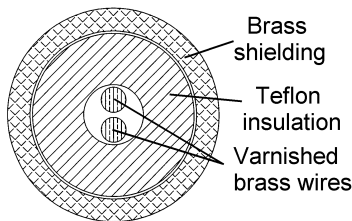
GVLZ031



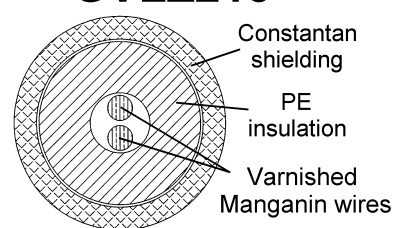
GVLZ189



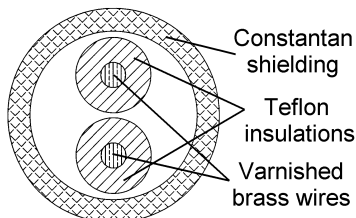
GVLZ169



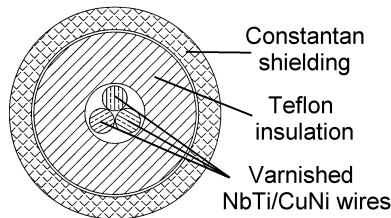
GVLZ215



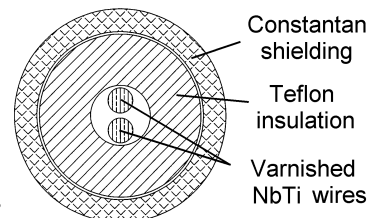
GVLZ141



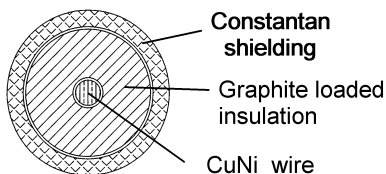
GVLZ030



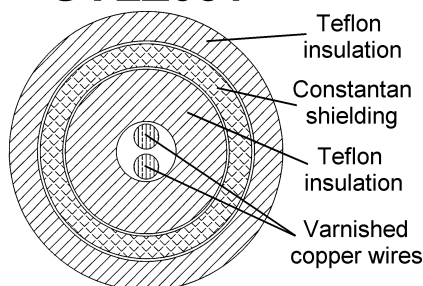
GVLZ217/GVLZ223



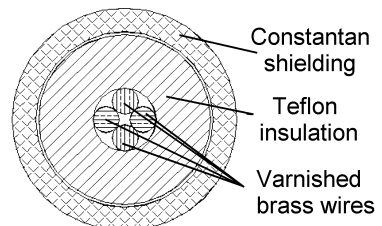
GVLZ185



GVLZ081



GVLZ224



REV8.1 - 7Mar19

Note: All values are typical. They can vary from batch to batch depending on the manufacturing details.

GVL Cryoengineering
Dr George V. Lecomte GmbH
Aachener Str.89, D-52223 Stolberg (Rheinl.)

Tel. +49(0)2402 24566
Fax +49(0)2402 26739

www.GVL-Cryoengineering.com
E-mail: GVL-CRYO@T-online.de