



instrumentation cable series

# VIBRACOAX

## Solid-Dielectric Piezoelectric Coaxial Vibration &

Solid compressed piezoceramic-mineral coaxial WIM, impact & perimeter sensing cable



Seamless Copper MIMS Tube

Compressed Piezoceramic Core

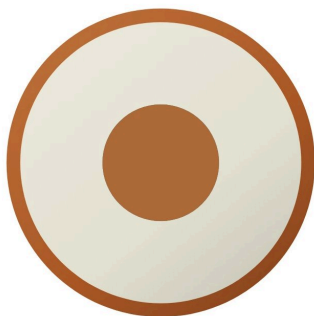
Class I WIM &amp; Perimeter

### Application

VIBRACOAX Solid-Dielectric Piezoelectric Coaxial Sensing Cable (3.0 mm copper tube / 3.9 mm PU-jacketed) manufactured by compacting radially polarized piezoelectric mineral/ceramic powder between a solid copper centre conductor and a.

**Typical uses:** High-Speed Highway Weigh-In-Motion (Class I WIM), Military Base, Airport & Prison Perimeter Fences, Bank Vault Wall, Roof & Buried Ground Intrusion, Ballistic Acoustic Target Scoring & Impact Gauges, Rail Wheel-Flat & Bogie Hunting Trackside Detectors

### Construction



Cross-section, not to scale

- 1 Solid annealed copper centre electrode
- 2 Compacted radially poled piezoceramic mineral powder
- 3 Seamless cold-drawn copper outer tubular electrode
- 4 UV-stabilized Polyurethane (PU) / PE protective jacket

## Technical data

Typical values

|                             |                                                                |                             |                                                         |
|-----------------------------|----------------------------------------------------------------|-----------------------------|---------------------------------------------------------|
| Piezoelectric sensitivity   | ≈ 15 to 22 pC/N (calibrated to ±5 % or ±10 % uniformity class) | Linear capacitance @ 1 kHz  | 820 ± 80 pF/m (@ 20 °C)                                 |
| Insulation resistance       | ≥ 10 <sup>11</sup> Ω·m @ 100 V DC (hermetically sealed)        | Transfer impedance          | < 1 mΩ/m (solid seamless copper outer tube)             |
| Operating temp. (Bare Cu)   | -55 °C to +125 °C continuous (up to +150 °C peak)              | Operating temp. (PU Jacket) | -40 °C to +90 °C continuous                             |
| Sensitivity temp. stability | ≤ ±5 % variation across -20 °C to +70 °C                       | Outer diameter              | 3.00 ± 0.05 mm (Bare Cu) · 3.90 ± 0.10 mm (PU Jacketed) |
| Min. cold bend radius       | 20 mm (hand-formable annealed copper tube)                     | Hydrostatic crush strength  | > 100 MPa radial compression without short-circuit      |
| Dynamic axle fatigue life   | > 100,000,000 axle passes (inorganic mineral-ceramic core)     | Moisture permeability       | Zero (100 % seamless metallic copper tube barrier)      |
| EMI / lightning immunity    | Solid copper tube shields inner conductor from 50/60 Hz & RF   | Standards                   | ASTM E1318 & COST 323 Class I Weigh-In-Motion           |

## Sizes

3 standard constructions

Tick the sizes you need and send this page to [info@tebaoflex.com](mailto:info@tebaoflex.com) or WhatsApp +86 185 9591 3361.

| Order designation                                                     | Jacket & uniformity class                         | Outer Ø<br>mm | Weight ≈<br>kg/km | Capacitance<br>pF/m | Uniformity<br>±% |
|-----------------------------------------------------------------------|---------------------------------------------------|---------------|-------------------|---------------------|------------------|
| Solid-Dielectric Copper-Sheathed Piezoelectric Coaxial Cables 3 sizes |                                                   |               |                   |                     |                  |
| <input type="checkbox"/> VIBRACOAX 3.0-CU-CL1                         | Bare Copper Tube · Class I WIM (±5 % Uniformity)  | 3.00          | 42                | 820                 | 5                |
| <input type="checkbox"/> VIBRACOAX 3.9-PU-CL1                         | PU Jacketed · Class I WIM (±5 % Uniformity)       | 3.90          | 49                | 820                 | 5                |
| <input type="checkbox"/> VIBRACOAX 3.9-PU-SEC                         | PU Jacketed · Perimeter Fence & Intrusion (±10 %) | 3.90          | 49                | 820                 | 10               |

– Can be supplied as custom cut-to-lane WIM sensor bars (1.8 m to 4.0 m) or up to 300 m perimeter security zones.

## Standards and approvals

- ✓ COST 323 Class I WIM
- ✓ ASTM E1318 Compliant
- ✓ EN 50131-1 Security Grade

## Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

### Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

**+86 185 9591 3361**

Email

**info@tebaoflex.com**

Web

**tebaoflex.com/cables/vibracoax-solid-dielectric-piezoelectric-coaxial-vibration-impact-sensing-cable**



Typical values for this cable type, based on ASTM E1318 / COST 323 / EN 50131-1. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.