

What are instrumentation cables?



Shanghai, China Nov 25, 2025 ([Issuewire.com](https://www.issuewire.com)) - [Instrumentation Cables](#): The "Nervous System" of Industrial Automation, Dingzun Cable Leads with 20-Year Expertise

As global industrial automation accelerates, instrumentation cables—dubbed the "nervous system" of modern factories—are gaining unprecedented attention. These specialized cables transmit low-energy analog and digital signals for monitoring and control, which are critical to industries such as oil & gas, petrochemicals, and steel.

Unlike standard power cables, instrumentation cables require a robust anti-interference design to ensure stable signal transmission. Their core structural advantages lie in specialized protective components:

Conductor Material: mainly copper or tinned copper.

CI (Fire Barrier): mica glass tape (MGT) is optional when fire-performance is required.

Insulation Material: Y represents PVC, 2X represents XLPE, 3G represents EPR, etc.

IS (Individual Shield): for each twisted pair/triad/quad, options include PIMF, TIMF, QIMF, ICAM, with the main type being AL-PET plus a drain wire (TC) when required.

Cores/Pairs: multi-core stranded, or multi-pair, multi-triad and multi-quad twisted constructions.

OS (Overall or Collective Shield): usually required; main type is AL-PET plus a drain wire (TC) covering the overall parts.

Inner Jacket or Sheath: optional; examples include Y (PVC), H (LSZH), etc.

Armor Layer: mainly SWA (galvanised steel wire armour) wrapping; optional depending on requirements.

Outer Jacket or Sheath: examples include Y (PVC), H (LSZH), Y-fl (flame-retardant PVC), etc.

Rating Voltage: 300 V for single or multi pairs/triads/quads instrumentation cables; 300/500 V for single or multi-core instrumentation cables; other ratings also supported.

Basic Standard: EN 50288-7.

The unique performance of [instrumentation cables](#) makes them indispensable in high-demand industrial scenarios. For example, in oil refineries—where precise monitoring is critical to operational safety—these cables act as a vital link, relaying real-time pressure and temperature data from on-site sensors to central control rooms, directly supporting the prevention of safety hazards and the maintenance of stable production processes. Additionally, their compact structural design offers practical advantages: it saves up to 40% of installation space compared to traditional alternatives, making them particularly suitable for airtight industrial environments (such as closed factory workshops or equipment compartments) where space utilization is a key consideration.

Among manufacturers, Shanghai Dingzun Electric & Cable Co., Ltd. stands out as a national high-tech enterprise with two decades of experience. Founded in 2005, Dingzun integrates R&D, production, and service, offering over 800 cable specifications with an annual output of 70 million meters. Its instrumentation cable lineup includes fire-resistant multi-core models (e.g., 300/500V CU/MGT/XLPE/OS/FR/LSZH/GSWA/LSZH) and explosion-proof variants compliant with EN 50288-7 standards. These products excel in extreme settings—from high-temperature chemical plants to offshore oil rigs.

If you have any question about instrumentation, please feel free to [contact us](#)

Media Contact

Shanghai Dingzun Electric & Cable Co., Ltd.

*****@dingzuncable.com

+86 18019377761

No. 136, Changxiang Rd., Nanxiang Town, 201802, Shanghai, China

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