Product Overview

QZ Cable offers CCSX-Hybrid covered conductors for medium-voltage overhead power distribution networks. Designed for outdoor applications, this conductor combines longitudinal water blocking, a semi-conductive conductor screen, XLPE insulation, and a UV-resistant HDPE outer sheath.

The conductor features a round-stranded, non-compacted design. An extruded polymer compound is applied between the conductor layers to restrict longitudinal water penetration and help reduce the risk of moisture-related corrosion.

The three extruded functional layers are manufactured in an integrated process to ensure consistent construction and product quality.

The HDPE outer sheath provides additional resistance to abrasion, weather exposure, UV radiation, and electrical tracking, making CCSX-Hybrid suitable for overhead distribution routes exposed to demanding outdoor conditions.

Available conductor configurations include AAAC, ACSR, and ACSC, depending on project requirements.

Cable Construction

1. Conductor

- AAAC: All Aluminium Alloy Conductor
- ACSR: Aluminium Conductor Steel Reinforced
- ACSC: Aluminium Conductor Steel-Clad, subject to the specified design
- Construction: Round-stranded, non-compacted

2. Longitudinal Water-Blocking Layer

- Extruded polymer compound applied between conductor layers
- Restricts water penetration along the conductor
- Helps reduce moisture-related corrosion risks

3. Inner Semi-Conductive Screen

- Extruded semi-conductive compound
- Provides a controlled electrical interface between the conductor and XLPE insulation

4. Insulation

- Cross-linked polyethylene (XLPE)
- Provides dielectric performance for the specified medium-voltage design

5. Outer Sheath

- UV-resistant high-density polyethylene (HDPE)
- Designed for abrasion and tracking resistance
- Typically grey, subject to customer requirements

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Key Characteristics

- **Longitudinal Water Blocking:** Extruded polymer between conductor layers helps prevent water from spreading along the conductor.
- **Integrated Three-Layer Extrusion:** The water-blocking and three extruded covering layers are manufactured in one integrated process.
- **XLPE Insulation:** Provides electrical insulation and thermal performance for the specified voltage class.
- **HDPE Protective Sheath:** Offers additional resistance to abrasion, outdoor weathering, and UV exposure.
- **Tracking Resistance:** The specified outer sheath compound is designed to resist electrical tracking.
- **Multiple Conductor Options:** AAAC, ACSR, and ACSC configurations are available according to project requirements.
- **Outdoor Durability:** Suitable for overhead distribution applications requiring additional environmental protection.

Applications

CCSX-Hybrid covered conductors are designed for:

- Medium-voltage overhead power distribution
- Urban and suburban distribution networks
- Rural electrification projects
- Overhead lines exposed to moisture and weather
- Distribution routes requiring longitudinal water blocking
- Overhead networks where abrasion-resistant protective covering is required

Technical Specifications

Parameter	Description
Product Name	CCSX-Hybrid Covered Conductor
Product Type	Medium-Voltage Covered Overhead Conductor
Conductor Material	Aluminium Alloy / Aluminium with Steel Reinforcement
Conductor Options	AAAC / ACSR / ACSC
Conductor Construction	Round-Stranded, Non-Compacted
Water Blocking	Extruded Polymer Between Conductor Layers
Conductor Screen	Extruded Semi-Conductive Compound
Insulation	XLPE
Outer Sheath	UV-Resistant HDPE
Sheath Properties	Abrasion-Resistant and Tracking-Resistant
Standard Colour	Grey
Voltage Classes	Project-specific; examples include 10(12), 20(24), 30(36), and 52 kV designs
Maximum Continuous Conductor Temperature	80°C, according to referenced product design
Minimum Installation Temperature	-20°C, subject to installation conditions
Minimum Bending Radius During Pulling	15 × Overall Diameter
Minimum Bending Radius for Final Fixed Installation	10 × Overall Diameter

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Applicable Construction Standard EN 50397-1, within its scope

Note: The listed voltage classes and operating parameters are reference design options. Final values must be confirmed against the selected conductor, approved product drawings, utility requirements, and applicable standards.

Applicable Standards

EN 50397-1 – Covered Conductors for Overhead Lines and the Related Accessories for Rated Voltages Above 1 kV AC and Not Exceeding 36 kV AC.

Technical Specifications

Name	Cross section [mm*]	Outer diameter [mm]	Total weight [kg/km]	Strand diameter [mm]	Number of strands [pcs]
CCSX 25 ACSC 22kV W Hybrid	25	11.8	253	2.12	7
CCSX 50 AL7 20(24)kV W Hybrid	50	14.44	247	3.08	7
CCSX 62 ACSR 22kV W Hybrid	62	15.55	340	3.37	7
CCSX 62 AL7 20(24)kV W Hybrid	62	15.31	285	3.37	7
CCSX 70 AL7 22kV W Hybrid	70	16.15	323	3.57	7
CCSX AL7 70 33kV - Hybrid	70	18.57	385	3.57	7
CCSX 99 ACSR 20(24)kV W Hybrid	99	17.95	489	4.25	7
CCSX 99 AL7 22kV W Hybrid	99	18.19	429	4.25	7
CCSX 99 AL7 52kV W Hybrid	99	21.35	530	4.25	7
CCSX 120 AL7 20(24)kV W Hybrid	120	19.4	506	2.84	19
CCSX 120 AL7 22kV W Hybrid	120	19.64	516	2.84	19
CCSX 120 AL7 33kV W Hybrid	120	22.06	568	2.84	19
CCSX 120 AL7 ET W Hybrid	120	26.2	735	2.84	19
CCSX 159 AL7 22kV W Hybrid	159	21.74	642	3.26	19
CCSX 159 AL7 33kV W Hybrid	159	24.16	724	3.26	19

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Name	Cross section [mm*]	Outer diameter [mm]	Total weight [kg/km]	Strand diameter [mm]	Number of strands [pcs]
CCSX 159 AL7 52kV W Hybrid	159	24.9	751	3.26	19
CCSX 185 AL7 33kV W Hybrid	185	25.46	824	3.52	19
CCSX AL7 185 33kV Hybrid	185	25.46	739	3.52	19
CCSX 241 AL7 22kV W Hybrid	241	25.54	939	4.02	19
CCSX 241 AL7 33kV W Hybrid	241	27.96	1023	4.02	19

Frequently Asked Questions About CCSX-Hybrid Covered Conductors

1. What is a CCSX-Hybrid covered conductor?

CCSX-Hybrid is a round-wire, non-compacted, crosslinked covered overhead line conductor designed for reliable performance in overhead line applications. It features longitudinal water blocking, XLPE insulation and a UV-protected HDPE outer sheath.

2. What conductor types are available for CCSX-Hybrid?

CCSX-Hybrid is available with AAAC (All Aluminium Alloy Conductor), ACSR (Aluminium Conductor Steel Reinforced) and ACSC conductor designs, depending on the required product configuration.

3. What materials are used in CCSX-Hybrid construction?

The construction includes a conductor, an extruded semiconductive layer, XLPE insulation and a UV-protected HDPE outer sheath. The conductor is also longitudinally water-blocked using extruded polymer material between conductor layers.

4. What is the maximum operating temperature of CCSX-Hybrid?

CCSX-Hybrid is a thermoset (XLPE) covered conductor with a maximum operating temperature of +80°C.

5. Does CCSX-Hybrid have longitudinal water blocking?

Yes. Extruded polymer material is applied between each conductor layer to provide longitudinal water blocking. This construction helps prevent water ingress and reduces the risk of moisture-related corrosion.

6. What are the advantages of the HDPE outer sheath?

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The UV-protected HDPE outer sheath provides resistance to sunlight, abrasion and electrical tracking. It helps protect the conductor against outdoor environmental exposure and supports long-term service durability.

7. Is CCSX-Hybrid manufactured using a three-layer extrusion process?

Yes. The longitudinally water-blocked conductor and all three extruded layers are manufactured in a single integrated process to ensure consistent quality and product performance.

8. Which standard does CCSX-Hybrid comply with?

CCSX-Hybrid construction is manufactured according to EN 50397-1.

9. What is the bending radius of CCSX-Hybrid?

The specified bending radius is:

- During extraction: 15 × overall diameter (OD)
- For final fixed installation: 10 × overall diameter (OD)

Actual installation should follow the applicable project requirements and manufacturer's instructions.

10. What color is available for CCSX-Hybrid?

The standard color specified in the product information is grey.

11. How is CCSX-Hybrid marked for product traceability?

The conductor marking includes the manufacturer, product type, conductor designation, voltage designation where specified, EN 50397-1, year/month of manufacture and meter marking.

Example:

AMOKABEL-K CCSX 99 AAAC 20(24)kV W HYBRID EN50397-1

12. Can QZ Cable provide customized CCSX-Hybrid conductors?

QZ Cable can discuss customized conductor configurations and technical requirements according to project specifications. Customers are encouraged to provide conductor type, voltage requirements, technical drawings and applicable standards when requesting a quotation.

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