ANHUI FEICHUN SPECIAL CABLE CO., LTD.

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TECHNICAL SPECIFICATION

N2XRH Type Cable - SANS 1507 0.6/1kV | Low Smoke Zero Halogen Steel Wire Armored Cable



FEATURED SPECIFICATIONS

4 × 70 mm² | 4 × 120 mm² | 4 × 185 mm²

Black Sheath with White Strip for Enhanced Visibility in Dark Environments

PRODUCT OVERVIEW

The N2XRH type cable (Cu/XLPE/LSZH/SWA/LSZH) represents a premium low smoke zero halogen steel wire armored power cable designed specifically for public buildings and critical infrastructure where fire safety is paramount. This cable conforms to SANS 1507 and IEC international standards, providing superior protection for life and property in fire situations through its non-toxic, low smoke emission characteristics combined with robust mechanical protection.

The distinctive black sheath with white strip identification enhances cable visibility during installation and maintenance operations in dark environments, improving safety and operational efficiency. The galvanized steel wire armor provides exceptional resistance against mechanical impacts, making this cable ideal for demanding installation conditions.

STANDARDS & COMPLIANCE

Primary Standard

SANS 1507 0.6/1kV

International Standard

IEC 60502, IEC 60228

Rated Voltage

0.6/1 kV (Uo/U)

Cable Type

Type A Power Cable

CONSTRUCTION DETAILS

1. **Conductor:** Class 2 stranded copper conductor conforming to EN 60228, providing excellent electrical conductivity and flexibility
2. **Insulation:** XLPE (Cross-linked Polyethylene) offering superior thermal and electrical properties with maximum operating temperature of 90°C
3. **Filler:** LSZH (Low Smoke Zero Halogen) compound ensuring core roundness and structural integrity
4. **Armor:** Single layer galvanized round steel wires providing robust mechanical protection against external impacts and crushing forces
5. **Outer Sheath:** LSZH compound in black with white strip marking for enhanced visibility, offering flame retardancy and zero halogen emissions

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KEY CHARACTERISTICS & PERFORMANCE

Fire Safety

Flame retardant per IEC 60332-3 Category C. Low smoke density per IEC 61034 ensures clear evacuation routes during fire emergencies.

Zero Halogen

Complies with IEC 60754-1. No corrosive gas emissions per IEC 60754-2, protecting both people and sensitive electronic equipment.

Mechanical Protection

Galvanized steel wire armor provides excellent resistance against mechanical impacts, crushing forces, and physical damage.

Temperature Performance

Operating range: -20°C to +90°C. Maximum conductor temperature in service: 90°C. XLPE insulation ensures long-term thermal stability.

Enhanced Visibility

Black sheath with white strip marking improves cable identification and safety in dark installation environments and service areas.

Electrical Properties

Class 2 copper conductors with low electrical resistance ensure efficient power transmission and minimal energy losses.

APPLICATIONS

- Public buildings including hospitals, schools, shopping centers, and government facilities where fire safety is critical
- High-rise residential and commercial buildings requiring enhanced fire protection systems
- Underground and direct burial installations where mechanical protection is essential
- Industrial facilities and manufacturing plants with stringent safety requirements
- Transportation infrastructure including airports, railway stations, and metro systems
- Data centers and telecommunications facilities requiring halogen-free cables to protect sensitive equipment
- Applications involving mechanical stress where armored cable construction is mandatory
- Emergency power distribution systems and critical backup power circuits

TECHNICAL SPECIFICATIONS - FEATURED SIZES

Part Number	Cores × Cross Section	Insulation Thickness (mm)	Overall Diameter (mm)	Approx. Weight (kg/km)	BW/CW Gland	Cleats
A9SWA470LSZH	**4 × 70 mm²**	**1.1**	**29.5**	**4500**	**40**	**CC16**
A9SWA4120LSZH	**4 × 120 mm²**	**1.2**	**37.5**	**7400**	**50**	**CC20**
A9SWA4185LSZH	**4 × 185 mm²**	**1.6**	**46.4**	**10630**	**63S**	**-**

Installation Note: Bending factor when laying is 12 × D (where D is the overall cable diameter). Ensure adequate bending radius during installation to maintain cable integrity and performance.

ELECTRICAL CHARACTERISTICS - FEATURED SPECIFICATIONS

Conductor Electrical Resistance at 20°C

Cross Section	Conductor Class	Min. No. of Wires	Max. Resistance (Ω/km)
70 mm²	**Class 2**	**19**	**0.268**
120 mm²	**Class 2**	**37**	**0.153**
185 mm²	**Class 2**	**37**	**0.0991**

Current Carrying Capacity (4-Core Cable, Three-Phase AC)

Cross Section	Reference Method C Clipped Direct (A)	Reference Method E Free Air / Perforated Tray (A)	Reference Method D Direct in Ground (A)
70 mm²	**238**	**251**	**167**
120 mm²	**335**	**353**	**223**
185 mm²	**441**	**463**	**281**

Operating Conditions: Air ambient temperature: 30°C | Ground ambient temperature: 20°C | Conductor operating temperature: 90°C. Current ratings comply with IEC 60364-5-52 and BS7671 18th Edition.

Voltage Drop (Four Core Cable, Three-Phase AC)

Cross Section	Resistive Component r (mV/A/m)	Reactive Component x (mV/A/m)	Impedance Value z (mV/A/m)
70 mm²	**0.590**	**0.130**	**0.600**
120 mm²	**0.340**	**0.130**	**0.370**
185 mm²	**0.220**	**0.125**	**0.260**

COMPLETE PRODUCT RANGE - 4 CORE CABLES

Part Number	Cross Section	Insulation (mm)	Overall Ø (mm)	Weight (kg/km)	Gland	Cleats
A9SWA4015LSZH	4 × 1.5 mm²	0.6	8.5	365	20S	CC6
A9SWA4025LSZH	4 × 2.5 mm²	0.7	9.9	438	20	CC6
A9SWA4040LSZH	4 × 4 mm²	0.7	11.0	532	20	CC7
A9SWA4060LSZH	4 × 6 mm²	0.7	12.3	764	20	CC8
A9SWA410LSZH	4 × 10 mm²	0.7	14.5	1013	25	CC9
A9SWA416LSZH	4 × 16 mm²	0.7	17.0	1360	25	CC10
A9SWA425LSZH	4 × 25 mm²	0.9	21.0	2160	32	CC11
A9SWA435LSZH	4 × 35 mm²	0.9	23.6	2690	32	CC12
A9SWA450LSZH	4 × 50 mm²	1.0	25.0	3130	32	CC14
A9SWA470LSZH	**4 × 70 mm²**	**1.1**	**29.5**	**4500**	**40**	**CC16**
A9SWA495LSZH	4 × 95 mm²	1.1	33.3	5600	50S	CC18
A9SWA4120LSZH	**4 × 120 mm²**	**1.2**	**37.5**	**7400**	**50**	**CC20**
A9SWA4150LSZH	4 × 150 mm²	1.4	41.6	8780	50	-

Part Number	Cross Section	Insulation (mm)	Overall Ø (mm)	Weight (kg/km)	Gland	Cleats
A9SWA4185LSZH	**4 × 185 mm²**	**1.6**	**46.4**	**10630**	**63S**	**-**
A9SWA4240LSZH	4 × 240 mm²	1.7	52.6	13390	63	-
A9SWA4300LSZH	4 × 300 mm²	1.8	56.3	14998	75S	-

INSTALLATION GUIDELINES

Minimum Bending Radius

12 × Overall Diameter

Operating Temperature Range

-20°C to +90°C

Max. Conductor Temperature

90°C (Normal Operation)

Short Circuit Temperature

Per IEC 60364-5-52

Important Installation Notes:

- Where conductors operate above 70°C, verify that connected equipment is rated for the conductor operating temperature (per Regulation 512.1.2 of IEE Wiring Regulations 17th Edition)
- If connecting to equipment designed for maximum 70°C operation, use current ratings from equivalent 70°C thermoplastic insulated cable tables (per Regulation 523.1 of IEE Wiring Regulations 17th Edition)
- Ensure proper cable support using appropriate wraparound cleats as specified in the technical tables
- Use correctly sized cable glands (BW/CW type) as indicated for each cable size
- The white strip marking on the black sheath enhances visibility during installation and maintenance in dark environments

QUALITY ASSURANCE & TESTING

All cables manufactured by Anhui Feichun Special Cable Co., Ltd. undergo rigorous testing procedures to ensure compliance with SANS 1507 and IEC international standards. Testing protocols include:

Conductor Testing

Electrical resistance measurement per EN 60228. Verification of conductor class, stranding, and cross-sectional area compliance.

Insulation Testing

High voltage testing, insulation resistance measurement, and thermal aging tests to verify XLPE performance characteristics.

Fire Performance

Flame retardancy per IEC 60332-3 Category C. Smoke density per IEC 61034. Halogen content per IEC 60754-1.

Corrosivity Testing

Gas corrosivity evaluation per IEC 60754-2 to ensure no harmful emissions during combustion.

Mechanical Testing

Impact resistance, bending tests, and armor integrity verification to ensure mechanical protection performance.

Dimensional Verification

Overall diameter, insulation thickness, armor wire diameter, and sheath thickness measurements against specifications.

SAFETY FEATURES & BENEFITS

Fire Safety Performance

The N2XRH cable provides comprehensive fire safety protection through multiple layers of defense:

- **Low Smoke Density:** Compliant with IEC 61034, the cable produces minimal smoke during fire, maintaining visibility for safe evacuation and firefighting operations

- **Zero Halogen Emissions:** LSZH materials ensure no toxic halogen gases (chlorine, fluorine, bromine) are released during combustion, protecting human life and reducing corrosive damage to equipment
- **Flame Retardancy:** Meets IEC 60332-3 Category C requirements, preventing fire propagation along cable runs
- **Non-Corrosive Gases:** Per IEC 60754-2, combustion products are non-corrosive, protecting critical electronic systems and infrastructure

Mechanical Protection

The galvanized steel wire armor provides exceptional mechanical performance:

- Protection against crushing forces during and after installation
- Resistance to impact damage from tools, equipment, or environmental hazards
- Enhanced durability for direct burial applications
- Protection against rodent damage in underground installations
- Galvanized coating prevents corrosion in harsh environmental conditions

Operational Advantages

- **Enhanced Visibility:** Black sheath with white strip marking improves cable identification in dark environments, reducing installation errors and simplifying maintenance
- **Wide Temperature Range:** -20°C to +90°C operating range suitable for diverse climatic conditions
- **XLPE Insulation:** Superior electrical properties, moisture resistance, and long-term thermal stability compared to PVC alternatives
- **Class 2 Conductors:** Optimal balance of flexibility and current carrying capacity
- **Compliance Assurance:** Meets South African SANS 1507 standards, ensuring regulatory compliance for local installations

TECHNICAL NOTES & WARNINGS

Temperature Ratings: The maximum conductor operating temperature is 90°C. When connecting cables to equipment rated for lower temperatures (typically 70°C), consult appropriate derating tables or use current ratings for 70°C thermoplastic cables to prevent equipment damage.

Short Circuit Conditions: During short circuit events, conductor temperatures may exceed normal operating limits. Short circuit duration must be limited according to IEC 60364-5-52 calculations to prevent insulation damage. Maximum short circuit temperature limits apply per cable construction and duration.

Installation Environment: Current carrying capacities are based on specific ambient conditions (30°C air, 20°C ground). For installations in environments exceeding these temperatures, appropriate derating factors must be applied. Consult IEC 60364-5-52 or BS7671 for derating calculations.

Cable Grouping: When multiple cables are installed in close proximity, thermal interaction reduces individual cable current carrying capacity. Apply appropriate grouping factors based on installation method, spacing, and number of cables per IEC 60364-5-52.

Bending Radius: Never exceed the minimum bending radius of 12 × overall cable diameter. Excessive bending can damage armor wires, compromise insulation integrity, and reduce cable service life. Use appropriate support systems and cable routing to maintain proper bend radii.

ORDERING INFORMATION

When placing orders for N2XRH cables, please specify the following information:

1. **Part Number:** Complete part number (e.g., A9SWA470LSZH, A9SWA4120LSZH, A9SWA4185LSZH)
2. **Cable Configuration:** Number of cores × cross-sectional area (e.g., 4 × 70 mm^2, 4 × 120 mm^2, 4 × 185 mm^2)

3. **Cable Length:** Required length in meters or complete drum lengths
4. **Drum Type:** Specify if wooden or steel drums are required for delivery
5. **Test Certificates:** Specify if third-party test certificates are required
6. **Special Requirements:** Any additional markings, testing, or packaging requirements

Standard delivery is on wooden or steel drums appropriate for the cable size and weight. Each drum is clearly labeled with cable specifications, length, gross weight, and manufacturing date.

CERTIFICATIONS & COMPLIANCE SUMMARY

Standard / Regulation	Requirement	Compliance Status
SANS 1507	0.6/1 kV Power Cables	✓ Fully Compliant
IEC 60502	Power Cables with Extruded Insulation	✓ Fully Compliant
EN 60228	Conductors of Insulated Cables	✓ Class 2 Conductors
IEC 60332-3 Cat. C	Flame Retardancy	✓ Tested & Certified
IEC 60754-1	Halogen Content	✓ Zero Halogen
IEC 60754-2	Gas Corrosivity	✓ Non-Corrosive
IEC 61034	Smoke Density	✓ Low Smoke
IEC 60364-5-52	Selection and Erection - Wiring Systems	✓ Fully Compliant
BS7671 18th Edition	IEE Wiring Regulations	✓ Current Ratings Verified

STORAGE & HANDLING

Storage Temperature

-5°C to +35°C

Storage Humidity

Max 85% RH

Drum Storage

Store upright, avoid direct sunlight

Shelf Life

3 years under proper conditions

Handling Precautions:

- Protect cable ends from moisture ingress during storage and installation
- Do not drop drums or subject cables to impact damage
- Unwind cables carefully to prevent kinking or twisting
- Inspect cables for damage before installation
- Follow minimum bending radius requirements at all times
- Store drums on level ground to prevent rolling

WARRANTY & SUPPORT

Anhui Feichun Special Cable Co., Ltd. warrants that all N2XRH cables are manufactured in accordance with stated specifications and applicable international standards. Cables are guaranteed to be free from defects in materials and workmanship under normal use and service conditions.

For technical support, installation guidance, or product information, please contact our technical service department. Our engineering team is available to assist with cable selection, installation planning, and application-specific requirements.

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