FEICHUN CABLE

Anhui Feichun Special Cable Co., Ltd.

安徽飞纯特种电缆有限公司

TECHNICAL SPECIFICATION DATASHEET

RHEYFIRM NTSCGEWTOEUS 3×25+3×25/3 (8.7/15 kV)

Application Overview

The FEICHUN RHEYFIRM NTSCGEWTOEUS series represents cutting-edge flexible reeling cable technology engineered for demanding power transmission applications. This advanced cable system is specifically developed to excel under extreme mechanical conditions including severe torsional stress, high-velocity reeling operations, and multi-directional flexing scenarios. The cable demonstrates exceptional performance in challenging industrial environments, making it the preferred choice for critical infrastructure applications requiring uninterrupted power supply under dynamic operating conditions.

Primary Applications: Ship-to-Shore Container Cranes (STS), Rail-Mounted Gantry Cranes (RMG), Mobile Ship Unloaders, Stacker Reclaimer Systems, Heavy-Duty Mobile Mining Equipment, Festoon Power Supply Systems, Open-Cast Mining Operations, Underground Material Handling Systems, and High-Performance Industrial Automation Equipment.

Product Identification & Standards

BRAND SERIES

FEICHUN RHEYFIRM

TYPE DESIGNATION

NTSCGEWTOEUS

RATED VOLTAGE (U_0/U/UM)

8.7/15 (18) kV

CORE CONFIGURATION

3×25+3×25/3 mm^2

STANDARD COMPLIANCE

DIN VDE 0250-813, IEC 60502-2

ADDITIONAL STANDARDS

DIN VDE 0295, 0298, 0472, prEN 50363

Advanced Design Architecture

Cable Construction Layers

1. FSC Conductor
2. RHEYCLEAN Insulation
3. RHEYSTRIP Semiconductor
4. Earth Conductor
5. Inner Sheath
6. Reinforcement
7. Outer Sheath

Primary Conductor System

The conductor system utilizes premium-grade flexible bare copper construction with FSC (Flexible Stranded Conductor) classification exceeding IEC 60228 Class 5 requirements. The ultra-fine stranding technology ensures superior flexibility characteristics while maintaining exceptional electrical conductivity and mechanical resilience. Each conductor strand undergoes precision manufacturing processes to guarantee optimal performance under extreme dynamic conditions.

RHEYCLEAN Insulation Technology

Revolutionary RHEYCLEAN insulation compound based on advanced Ethylene Propylene Diene Monomer (EPDM) formulation provides superior performance characteristics exceeding DIN VDE 207 Part 20 specifications. The innovative three-layer insulation system incorporates: Inner semiconductive screening layer for uniform electric field distribution, premium RHEYCLEAN insulation core for enhanced dielectric strength, and outer RHEYSTRIP semiconductive layer featuring easy-strip technology for simplified cable preparation and installation procedures.

Six-Core Design Configuration

Advanced six-conductor architecture incorporates three primary phase conductors and three dedicated protective earth conductors strategically positioned in interstitial spaces. This optimized core arrangement enhances electromagnetic compatibility, reduces interference levels, and provides superior earth fault protection. The lay length is precisely engineered and optimized for specific application requirements to ensure maximum flexibility and durability.

Enhanced Sheath System

Multi-layer protective sheath system featuring: High-performance inner sheath manufactured from specialized synthetic rubber compound exceeding GM1b specifications providing moisture barrier and chemical resistance. Ultra-high tensile strength synthetic fiber reinforcement layer engineered to withstand extreme torsional stress and pressure loading conditions. Innovative sandwich-construction outer sheath combining optimal flexibility with exceptional abrasion resistance and mechanical protection, finished in distinctive red identification color.

Electrical Performance Specifications

NOMINAL VOLTAGE (U_0/U)

8.7/15 kV

MAXIMUM OPERATING VOLTAGE AC

18 kV (Um = 1.2 × U)

MAXIMUM OPERATING VOLTAGE DC

27 kV (Vm = 1.8 × U)

AC DIELECTRIC TEST VOLTAGE

32 kV (60 Hz, 5 minutes)

DC DIELECTRIC TEST VOLTAGE

76 kV (15 minutes)

EMC COMPATIBILITY

Excellent (6-core design)

EMC Performance: The six-core design architecture provides exceptional electromagnetic compatibility characteristics, significantly reducing interference levels and ensuring optimal signal integrity in complex industrial electromagnetic environments.

Mechanical & Environmental Properties

STATIC TENSILE STRESS

15 N/mm² (conductor)

DYNAMIC TENSILE STRESS

30 N/mm² (conductor)

BENDING RADIUS

Per DIN VDE 0298

MAXIMUM REELING SPEED

190 m/min (higher on request)

OIL RESISTANCE

Excellent

WEATHER RESISTANCE

UV, Ozone, Moisture Resistant

Thermal Characteristics

MAXIMUM SERVICE TEMPERATURE

+90°C (conductor)

SHORT CIRCUIT TEMPERATURE

+250°C (conductor)

FIXED INSTALLATION RANGE

-50°C to +80°C

MOBILE OPERATION RANGE

-35°C to +80°C

INSTALLATION TEMPERATURE

Minimum -15°C

FLAME RETARDANCY

IEC 60332-1 compliant

Comprehensive Technical Data Tables

8.7/15 kV Series - Physical Dimensions & Mass Properties

Core Configuration (mm²)	Part Number	Outer Diameter Min (mm)	Outer Diameter Max (mm)	Cable Weight (kg/km)	Copper Weight (kg/km)
3×25+3×25/3	**FC-RHF-8701**	**40.2**	**43.2**	**2,420**	**445**
3×35+3×25/3	FC-RHF-8702	43.5	46.5	2,980	580
3×50+3×25/3	FC-RHF-8703	47.8	50.8	3,650	695
3×70+3×35/3	FC-RHF-8704	50.5	53.5	4,580	925
3×95+3×50/3	FC-RHF-8705	56.8	59.8	5,650	1,185
3×120+3×70/3	FC-RHF-8706	59.4	62.4	6,780	1,485
3×150+3×70/3	FC-RHF-8707	65.7	68.7	8,210	1,740

Core Configuration (mm²)	Part Number	Outer Diameter Min (mm)	Outer Diameter Max (mm)	Cable Weight (kg/km)	Copper Weight (kg/km)
3×185+3×95/3	FC-RHF-8708	69.8	72.8	9,550	2,130

Mechanical Performance & Load Capacities

Core Configuration (mm²)	Tensile Strength (N)	Dynamic Load (N)	Bend Radius Min (mm)	Torsion Resistance (°/m)	Crush Resistance (N/cm)
3×25+3×25/3	**3,100**	**4,650**	**432**	**±180**	**2,200**
3×35+3×25/3	3,100	4,650	465	±180	2,350
3×50+3×25/3	3,100	4,650	508	±180	2,500
3×70+3×35/3	4,350	6,525	535	±160	2,750
3×95+3×50/3	5,850	8,775	598	±160	3,100
3×120+3×70/3	7,400	11,100	624	±140	3,400
3×150+3×70/3	9,250	13,875	687	±140	3,750
3×185+3×95/3	11,400	17,100	728	±120	4,200

Electrical Performance Parameters

Core Configuration (mm²)	DC Resistance 20°C (Ω/km)	AC Resistance 90°C (Ω/km)	Reactance (Ω/km)	Current Rating[1] (A)	Short Circuit[2] (kA)
3×25+3×25/3	**0.727**	**0.891**	**0.095**	**142**	**3.68**
3×35+3×25/3	0.524	0.642	0.092	175	5.15
3×50+3×25/3	0.387	0.474	0.089	218	7.35
3×70+3×35/3	0.268	0.328	0.086	268	10.28
3×95+3×50/3	0.193	0.236	0.083	325	13.95
3×120+3×70/3	0.153	0.187	0.081	378	17.62
3×150+3×70/3	0.124	0.152	0.079	435	22.05
3×185+3×95/3	0.0991	0.121	0.077	498	27.18

Installation & Service Parameters

Core Configuration (mm²)	Reeling Speed Max (m/min)	Flex Cycles[3] (×10⁶)	Service Life (years)	Installation Temp (°C)	Capacitance (nF/km)
3×25+3×25/3	**190**	**≥2.5**	**30**	**-15 to +50**	**295**
3×35+3×25/3	190	≥2.5	30	-15 to +50	305
3×50+3×25/3	190	≥2.5	30	-15 to +50	315
3×70+3×35/3	185	≥2.2	30	-15 to +50	330

Core Configuration (mm^2)	Reeling Speed Max (m/min)	Flex Cycles[3] ($\times 10^6$)	Service Life (years)	Installation Temp (°C)	Capacitance (nF/km)
3×95+3×50/3	180	≥2.2	30	-15 to +50	345
3×120+3×70/3	175	≥2.0	30	-15 to +50	365
3×150+3×70/3	170	≥2.0	30	-15 to +50	380
3×185+3×95/3	165	≥1.8	30	-15 to +50	395

Technical References:

[1] Current carrying capacity calculated according to DIN VDE 0298-4 for cable installation on surface at 30°C ambient temperature. Enhanced ratings available for specific installation conditions.

[2] Short circuit current capability based on 1-second fault duration. Extended fault durations require consultation with manufacturer.

[3] Flexing cycle capability under standard test conditions with specified bend radius. Performance may exceed minimum values under optimal conditions.

Note: Higher reeling speeds beyond specified limits available upon consultation. Custom configurations and enhanced specifications available on request.

Quality Assurance & Testing Protocols

ALTERNATING BEND TEST

≥ 2,500,000 cycles

TORSIONAL RESISTANCE TEST

±180°/m × 150,000 cycles

HIGH VOLTAGE TEST

32 kV AC / 5 minutes

PARTIAL DISCHARGE TEST

≤ 5 pC at 1.5 U_0

INSULATION RESISTANCE

≥ 100 GΩ·km at 20°C

MANUFACTURING STANDARD

ISO 9001:2015 Certified

Installation Guidelines: Professional installation required. Maintain minimum bending radius during installation. Avoid excessive tension during pulling operations. Ensure proper cable support systems are implemented for mobile applications.

Optional Configurations & Customization

FEICHUN offers extensive customization capabilities to meet specific application requirements. Available options include alternative sheath materials and colors, integrated monitoring conductors (concentric or individual core configuration), embedded signal transmission cores, telecommunication elements, fiber optic integration, and pre-assembled sealing ends. Consultation with technical specialists is recommended for complex installation requirements or non-standard operating conditions.