ANHUI FEICHUN SPECIAL CABLE CO., LTD.
安徽飞纯特种电缆有限公司

INDUSTRIAL CONTROL & POWER CABLE SOLUTIONS · WWW.FEICHUNCABLES.COM

PRODUCT SPECIFICATION — FLAME-RETARDANT OIL-RESISTANT CONTROL CABLE FOR MACHINE TOOLS AND INDUSTRIAL EQUIPMENT

H05VV5-F (NYSLYÖ-JZ)

Multi-Core Flexible Control Cable with Oil-Resistant PVC Insulation and Sheath | 300/500V Rating
Class 5 Stranded Copper Conductors | Available in 3 to 25 Core Configurations | 1.5 mm² and 2.5 mm² Cross-Sections
Temperature Range: -40°C to +70°C | Flame Retardant IEC 60332-1-2 | Oil Resistant per EN 60811-404

Contact: Tech@feichuncables.com | +86 138 5512 3218 | www.feichuncables.com

H05 300/500V | OIL RESISTANT | FLAME RETARDANT | CLASS 5 FLEXIBLE | INDUSTRIAL GRADE

DOCUMENT FC-PDS-H05VV5F-2026-002
REVISION Rev. A1 | **DATE** 2026-02-11
CLASS Product Data Sheet | Oil-Resistant Control Cable
STANDARD EN 50525-2-51 | IEC 60227 | VDE 0281

★ HIGHLIGHTED SPECIFICATION
H05VV5-F Series
3G to 25G · 1.5-2.5 mm² · Oil Resist
300/500V · Class 5 · RAL 7001 Gray

OIL-RESISTANT CONTROL CABLE FOR INDUSTRIAL APPLICATIONS

The H05VV5-F cable series represents a specialized flexible control cable engineered for demanding industrial environments where exposure to oils, lubricants, and mechanical stress is routine. The designation H05VV5-F indicates a harmonized cable with rated voltage of three hundred volts to earth and five hundred volts between conductors, constructed with special oil-resistant PVC insulation and sheath materials. These cables serve as the nervous system for machine tools, production lines, conveyor systems, and automated manufacturing equipment where flexibility, oil resistance, and reliable signal transmission are paramount requirements. The Class five stranded conductor construction provides excellent flexibility for applications involving repeated movement while maintaining stable electrical characteristics.

TYPE DESIGNATION DECODE

H05	**Harmonized designation:** H indicates harmonized cable. 05 indicates rated voltage of 300/500V (300V to earth, 500V between conductors)
VV	**VV construction:** First V indicates PVC insulation on individual conductors. Second V indicates PVC outer sheath
5	**Class 5 conductor:** Flexible stranded copper conductors per IEC 60228, suitable for installations requiring flexibility and occasional movement
-F	**Flexible construction:** Cable designed for flexible applications where bending and movement occur during normal operation
3G1.5	**Core configuration:** 3 cores × 1.5 mm² cross-section. G indicates inclusion of green-yellow protective earth conductor
NYSLYÖ-JZ	**German equivalent:** Oil-resistant (Ö) control cable with Class 5 flexible conductors (JZ) per VDE standards

CABLE CONSTRUCTION

- **Conductor specification:** Fine-stranded bare copper conductors meeting Class five requirements per IEC sixty thousand two hundred twenty-eight. The multiple fine strands provide superior flexibility compared to solid or Class two stranded conductors, with typical strand counts ranging from forty to sixty individual copper wires per conductor depending on cross-sectional area.
- **Core insulation:** Special PVC compound designated TI2 provides excellent oil resistance while maintaining good electrical properties. The insulation is color-coded according to standard conventions with green-yellow protective earth conductor and numbered or color-identified phase conductors for proper termination.
- **Cable core assembly:** Individual insulated conductors are laid together with appropriate twist to minimize electromagnetic interference and maintain mechanical integrity. The core assembly includes fillers where necessary to maintain circular cross-section and consistent outer diameter.
- **Outer sheath:** Oil-resistant special PVC compound designated TM5 forms a protective outer jacket. Standard sheath color is gray per RAL seven thousand and one, providing UV resistance and

COMPLETE PRODUCT RANGE SPECIFICATIONS

CABLE MODEL	CONFIG	AWG	OD MIN-MAX (MM)	CU (KG/KM)	WEIGHT (KG/KM)	CURRENT* (A)
H05VV5-F 3G1.5	3 × 1.5	16	7.4 – 9.4	43	110	16
H05VV5-F 7G1.5	7 × 1.5	16	11.3 – 14.1	101	220	10.4
H05VV5-F 25G1.5	25 × 1.5	16	19.8 – 24.3	360	775	6.4
H05VV5-F 3G2.5	3 × 2.5	14	9.0 – 11.2	72	162	25
H05VV5-F 12G2.5	12 × 2.5	14	16.8 – 20.6	288	553 – 580	13.0
H05VV5-F 18G2.5	18 × 2.5	14	20.2 – 24.8	432	795 – 848	11.5

* Current carrying capacity shown for reference conditions with derating factors applied per VDE 0298-4. Values shown are for installation in air at 30°C. Actual current capacity depends on installation method, ambient temperature, grouping factors, and conductor operating temperature limits. Multi-core cables (7 cores and above) include derating: 7-core ×0.65, 12-core ×0.53, 18-core ×0.45, 25-core ×0.40. AWG values are approximate metric equivalents.

ELECTRICAL PERFORMANCE

ELECTRICAL PARAMETERS @ 20°C	
Rated voltage Uo/U	300 / 500 V AC
Test voltage	2000 V AC, 50 Hz, 5 min
Insulation resistance	≥ 20 MΩ × km
DC resistance 1.5 mm²	≤ 13.3 Ω / km
DC resistance 2.5 mm²	≤ 7.98 Ω / km
Conductor class	Class 5 (flexible stranded)
Conductor material	Bare copper per IEC 60228
Max conductor temp	70°C continuous operation
Short circuit temp (≤5s)	160°C maximum

MECHANICAL & INSTALLATION PARAMETERS

CURRENT DERATING CONSIDERATIONS

⚠ MULTI-CORE CURRENT DERATING REQUIRED

The current carrying capacity values provided in the specification table have been calculated with appropriate derating factors applied per VDE zero two nine eight dash four standards. Multi-core cables containing seven or more conductors require significant derating due to thermal accumulation effects and reduced heat dissipation capability. The single-core reference values are reduced by the following factors: seven cores multiplied by zero point six five, twelve cores multiplied by zero point five three, eighteen cores multiplied by zero point four five, and twenty-five cores multiplied by zero point four zero. For example, while a single 2.5 square millimeter conductor can carry twenty-five amperes, the same conductor in an eighteen-core cable is limited to approximately eleven point five amperes. Additional derating may be necessary for installations in conduits, cable trays with multiple cables, elevated ambient temperatures, or burial in soil. Engineers must verify current capacity calculations against actual installation conditions and applicable standards.

CORE COUNT	DERATING FACTOR	REASON
3-5 cores	1.00	No derating required
7 cores	0.65	Thermal accumulation
12 cores	0.53	Thermal accumulation
18 cores	0.45	Thermal accumulation
25 cores	0.40	Thermal accumulation

TYPICAL INDUSTRIAL APPLICATIONS

⚙ MACHINE TOOLS & PRODUCTION EQUIPMENT

H05VV5-F cables serve as power supply and control connections for CNC machine tools, lathes, milling machines, grinding equipment, and automated production machinery where exposure to cutting oils, hydraulic fluids, and coolants is routine. The flexible Class five conductor construction accommodates the limited movement required for cable routing to machine components while the oil-resistant insulation and sheath prevent degradation from continuous exposure to industrial lubricants. Typical applications include motor connections, control panel wiring, and sensor signal cables in manufacturing environments.

🏭 CONVEYOR SYSTEMS & MATERIAL HANDLING

Production lines, conveyor systems, and automated material handling equipment utilize these cables for power distribution and control signaling throughout industrial facilities. The cables connect motors, drives, limit switches, proximity sensors, and control stations where mechanical protection and oil resistance are essential. The gray RAL seven thousand and one sheath color provides professional appearance and visibility in industrial

professional industrial appearance. The sheath material resists oils, weak acids, and alkaline solutions commonly encountered in manufacturing environments.

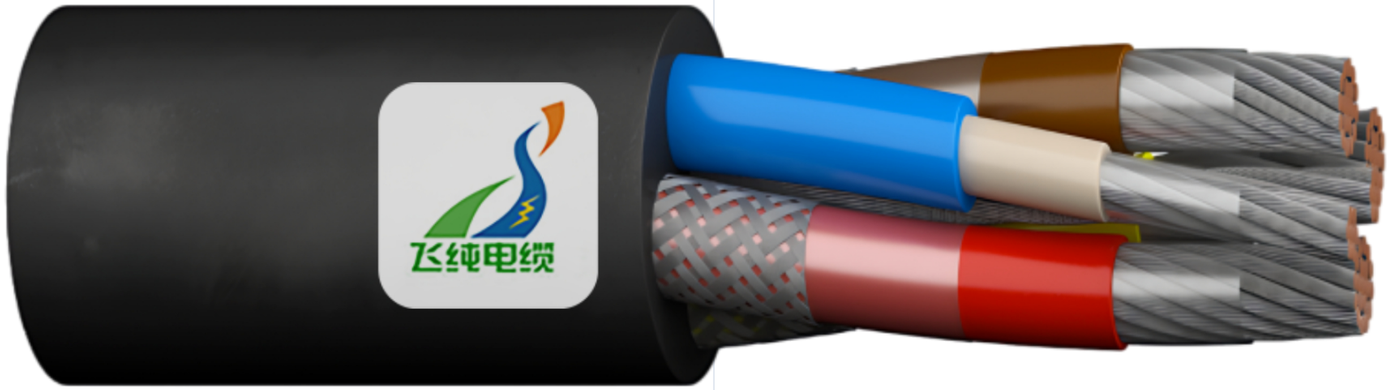
- **Temperature classification:** The cable is rated for operation from minus forty degrees Celsius to plus seventy degrees Celsius in fixed installations, with slightly reduced range for mobile applications involving continuous flexing. Installation should occur at temperatures above zero degrees Celsius to prevent insulation damage.

CONDUCTOR COLOR CODING

CORE COUNT	COLOR IDENTIFICATION
3-core (3G)	Brown, Blue, Green-Yellow
4-core	Brown, Black, Blue, Green-Yellow
5-core (5G)	Brown, Black, Gray, Blue, Green-Yellow
7-core (7G)	Numbered cores + Green-Yellow
12-25 core	Black numbered cores + Green-Yellow

ℹ GREEN-YELLOW EARTH CONDUCTOR

The designation "G" in specifications such as 3G1.5 or 12G2.5 indicates the presence of a dedicated protective earth conductor with green-yellow insulation per IEC standards. This earth conductor must be connected to protective earth at all termination points to ensure personnel safety and proper operation of protective devices. For cables without the G designation, all cores have colored insulation but no dedicated earth conductor is provided.



MECHANICAL SPECIFICATIONS	
Min bending radius (mobile)	`10 × outer diameter`
Min bending radius (fixed)	`4 × outer diameter`
Temperature range (mobile)	`−5°C to +70°C`
Temperature range (fixed)	`−40°C to +70°C`
Installation temperature	`≥ 0°C minimum`
Flame retardant	IEC 60332-1-2 / VDE 0482-332-1-2
Oil resistance	Per EN 60811-404
Sheath color standard	`Gray RAL 7001`

−40 °C — +70 °C

KEY INSTALLATION REQUIREMENTS

FIXED INSTALL	MOBILE INSTALL	INSTALL TEMP	MAX TEMP
4× OD	10× OD	≥ 0°C	+70°C
Min bend radius	Min bend radius	Minimum	Continuous

installations while the flame-retardant properties meet building code requirements for electrical installations.

✓ ASSEMBLY LINES & AUTOMATED SYSTEMS

Automated assembly equipment, robotic workstations, and programmable logic controller installations employ H05VV5-F cables for reliable connectivity in demanding industrial environments. The cables provide connections between control cabinets, operator interfaces, safety circuits, and field devices where vibration, mechanical stress, and exposure to industrial fluids occur. The standardized voltage rating of three hundred to five hundred volts accommodates both power distribution and control signal applications within a single cable family.

CRITICAL INSTALLATION NOTES

📋 ESSENTIAL INSTALLATION REQUIREMENTS

Installation must comply with applicable national electrical codes and local regulations including VDE standards in Germany, BS standards in the United Kingdom, and NEC requirements in North America where applicable. The protective earth conductor must be properly terminated at all connection points to ensure personnel safety. Cables should be protected from mechanical damage using appropriate cable protection systems including conduits, cable trays, or protective covers in areas subject to impact or abrasion. While the cable provides good oil resistance, direct immersion in aggressive chemicals or sustained exposure to temperatures exceeding seventy degrees Celsius will degrade performance and service life. Installation at temperatures below zero degrees Celsius risks insulation cracking and should be avoided.

APPLICABLE STANDARDS & COMPLIANCE

- `EN 50525-2-51` — Electric cables, Low voltage, Oil-resistant flexible cables
- `IEC 60227` — Polyvinyl chloride insulated cables of rated voltages up to 450/750 V
- `VDE 0281` — PVC insulated cables for rated voltages (German standard)
- `IEC 60228` — Conductors of insulated cables (Class 5 stranded specification)
- `IEC 60332-1-2` — Vertical flame test for single insulated wire or cable
- `EN 60811-404` — Test method for oil resistance of cable materials

300/500V | Class 5 | Oil Resist | Flame Retard
Flexible | VDE 0281 | EN 50525 | IEC 60227

📋 ORDER REFERENCE & AVAILABLE VARIANTS

For inquiries and orders, please specify complete model designation:

`H05VV5-F 3G1.5 0.5kV` — 3-core with earth, 1.5 mm²
`H05VV5-F 7G1.5 0.5kV` — 7-core with earth, 1.5 mm²
`H05VV5-F 25G1.5 0.5kV` — 25-core with earth, 1.5 mm²
`H05VV5-F 3G2.5 0.5kV` — 3-core with earth, 2.5 mm²
`H05VV5-F 12G2.5 0.5kV` — 12-core with earth, 2.5 mm²
`H05VV5-F 18G2.5 0.5kV` — 18-core with earth, 2.5 mm²

Voltage: **300/500V** | Construction: **Class 5 Flexible** | **Oil Resistant PVC**
Contact: **Tech@feichuncables.com** | **+86 138 5512 3218**
Also available: H07RN-F rubber cables · H05VV-F standard PVC · Custom core counts and cross-sections · Consult for special requirements.

All specifications are nominal values subject to normal manufacturing tolerances per applicable standards. Current carrying capacity calculations assume installation in free air at thirty degrees Celsius ambient temperature with conductors operating at seventy degrees Celsius maximum. Actual installation conditions including ambient temperature, grouping factors, installation method, and soil thermal properties must be considered when determining safe operating current levels. Compliance with local electrical codes and installation standards is mandatory.