H05RN-F (X05RN-F)

DB1600250EN
valid from: 2011-05-31

APPLICATION (HD 516/VDE 0298-300, HD 22.4/VDE 0282-4, HD 22.8/VDE 0282-8)

Low-voltage high-power current cable according to cable type standard HD (harmonisation document) 22.4 (= VDE 0282-4) or HD 22.8 (= VDE 0282-8)

Applications in households

Connection of hand-held inspection lamps

Connection of devices in kitchens and offices, examples:
- Vacuum cleaner
- Kitchenware
- Soldering gun
- Toaster

Light mechanical stress

Allowed kinds of water contact:
- Drops/Tears maximally
- No permanent contact
- No flooding
- No waves/swells

Suitability for permanent use outdoors with:
- Normal and light mechanical stress maximally
- Respect to:
  - Absence of ozone resistance of the outer sheath compound EM 2 according to HD 22.1/VDE 0282-1
  - Maximum conductor temperature of +60°C
  - Maximum cable surface temperature of the outer sheath of +50°C
  - Water contact at most with sporadic intensity in terms of drops/tears

Use as chain of lights, fairy lights or for similar decoration purposes:
- Temporally limited
- Indoors
- Outdoors
- For dimension ranges listed under HD 22.8/VDE 0282-8:
  - All single-core dimensions
  - Double-core dimensions with nominal conductor cross sections of 1.5 mm² or 2.5 mm²

General prevention of vibrations

Corrosive and polluting substances: Recurrent and accidental impact

Permitted permanent operation/system voltages:
(Rated IEC voltage class H05) (HD 22.1/VDE 0282-1, HD 22.4/VDE 0282-4, HD 22.8/VDE 0282-8):
- Phase/conductor-to-ground/PE (U_0) 330 VAC, 495 VDC
- Phase/conductor (not PE)-to-phase/conductor (not PE) (U) 550 VAC, 825 VDC

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DESIGN (HD 22.4/VDE 0282-4, HD 22.8/VDE 0282-8)

Conductor	Copper strands
Conductor class	Conductor class 5 according to IEC 60228/VDE 0295: Fine-wired and flexible for flexible use
Core insulation	Extruded, rubber-based compound EI 4 acc. HD 22.1/ VDE 0282-1
Outer sheath	Extruded, rubber-based compound EM 2 acc. HD 22.1/VDE 0282-1: - With inwards vectored fillers of the outer stranding inter-stices - Ability of dismantling without damaging of the cores

CABLE MARKING / CABLE TYPE CERTIFICATION
(HD 22.4/VDE 0282-4, HD 22.8/VDE 0282-8)

In case of harmonised versions according to HD 22.4/VDE 0282-4 or HD 22.8/VDE 0282-8:
- Cable type mark acc. HD 22.4/VDE 0282-4 or HD 22.8/VDE 0282-8: “H05RN-F”
- H05RN-F ◄HAR► cable type certification acc. HD 22.4/VDE 0282-4 or HD 22.8/VDE 0282-8
- ◄HAR► testing and certification mark acc. HD 22.1/VDE 0282-1 as well as HD 22.4/VDE 0282-4 or HD 22.8/VDE 0282-8

ELECTRICAL PROPERTIES (at +20°C) (HD 22.4/VDE 0282-4, HD 22.8/VDE 0282-8)

H05 rated voltage class U_0/U	300/500 Vac 450/750 Vdc
Test voltage:	
○ At the cores	1500 V according to EN 50395/VDE 0481-395
○ At the finished cable	2000 V according to EN 50395/VDE 0481-395

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MECHANICAL, THERMAL AND CHEMICAL PROPERTIES

Conductor temperature range (HD 516/VDE 0298-300)	-25°C to +60°C
Maximum cable surface temperature (HD 516/VDE 0298-300)	+50°C

Minimum bending radii (HD 516/VDE 0298-300) (in case of double-core, noncircular H05RN-F acc. HD 22.8/VDE 0282-8: according to the outer cable diameter measured in the equally aligned direction like the bending):

○ Fix installation:	
○ OD* ≤ 12 mm	3 x OD*
○ 12 mm < OD* ≤ 20 mm	4 x OD*
○ Moved freely:	
○ OD* ≤ 12 mm	4 x OD*
○ 12 mm < OD* ≤ 20 mm	5 x OD*
○ At the insertion of movable devices and equipment without mechanical stress on the cable:	
○ OD* ≤ 12 mm	4 x OD*
○ 12 mm < OD* ≤ 20 mm	5 x OD*
○ Mechanically stressed and at repeated wrapping (acc. HD 516/VDE 0298-300: only light mechanical stress allowed for H05RN-F/X05RN-F):	
○ Independently from the outer cable diameter	6 x OD*

Flame retardance	IEC 60332-1-2 (acc. HD 22.4/VDE 0282-4 or HD 22.8/VDE 0282-8)
Ozone resistance	Not ozone-resistant! (Outer sheath compound EM 2 acc. HD 22.1/VDE 0282-1)
Oil resistance	EN 60811-2-1/VDE 0473-811-2-1, 10. (Outer sheath compound EM 2 acc. HD 22.1/VDE 0282-1)
Heat strain of the outer sheath	EN 60811-2-1/VDE 0473-811-2-1, 9. (Outer sheath compound EM 2 acc. HD 22.1/VDE 0282-1)
Cold bending of the outer sheath	EN 60811-1-4/VDE 0473-811-1-4, 8.2 (Outer sheath compound EM 2 acc. HD 22.1/VDE 0282-1)

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Cold elongation of the outer sheath	EN 60811-1-4/VDE 0473-811 -1-4, 8.4 (Outer sheath compound EM 2 acc. HD 22.1/ VDE 0282-1)

This cable complies with the European RoHS directive 2002/95/EC and is “RoHS compliant”, since it falls in RoHS relevant, application related product categories of the European directive RoHS 2002/95/EC (**R**estriction **o**f (the use of certain) **H**azardous **S**ubstances) and WEEE 2002/96/EC (**W**aste **E**lectrical and **E**lectronic **E**quipment).

Due to the rated voltage class of this cable within the low voltage range (50 Vac to 1000 Vac), this cable is categorised as low voltage cable according to the European low voltage directive 2006/95/EC (LVD) and, thus, must be and is evaluated as EC compliant for the European domestic market placement. This means it corresponds to the European low voltage directive 2006/95/EC and the German Equipment and Product Safety Act as a consequence.

*OD = Outer cable diameter