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Flexible Cables and Cords

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# H07RN-F

60°C 450/750 V

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## Application

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For mains supply or extension leads for portable or fixed equipment operating indoors or outdoors (domestic or industrial) under conditions of frequent handling trailing or flexing. Incorporates heavy duty OFR (Oil resisting Flame Retardant) outer sheath.

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## Specifications

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- In accordance with Cenelec code H07RN-F
- **Conductors:** Flexible Class 5 plain copper conductors to BS EN 60228
- **Insulation:** Rubber insulation Type EI.4 to BS EN 50363-1
- **Core Identification:**
  - 2 core - blue, brown
  - 3 core - green/yellow, blue, brown
  - 4 core - green/yellow, brown, black, grey
  - 5 core - green/yellow, brown, black, grey, blue
- **Outer Sheath:** Black heavy duty rubber sheath Type EM.2 to BS EN 50363-2-1
- Flame retardant to BS EN 60332-1-2
- **Temperature Rating:** 60°C maximum conductor operating temperature
- **Voltage Rating:** 450/750 V

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For further technical information see page 2:44 (up to 2.5sqmm conductor size) and 2:66 (4.0sqmm and above).

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Anixter Number	Cenelec Code	Nominal Conductor Area mm <sup>2</sup>	Nominal Conductor Stranding #/mm	Insulation Thickness mm	Minimum O/D mm	Maximum O/D mm	Approximate Cable Weight kg/km
<b>Single-Core Type</b>							
H07RNF-1C-0015	H07RN-F1	1.5	30/0.25	0.8	5.7	7.1	65
H07RNF-1C-0025	H07RN-F1	2.5	50/0.25	0.9	6.3	7.9	82
H07RNF-1C-0040	H07RN-F1	4.0	56/0.3	1.0	7.2	9.0	105
H07RNF-1C-0060	H07RN-F1	6.0	84/0.3	1.0	7.9	9.8	125
H07RNF-1C-0100	H07RN-F1	10	80/0.4	1.2	9.5	11.9	190
H07RNF-1C-0160	H07RN-F1	16	126/0.4	1.2	10.8	13.4	265
H07RNF-1C-0250	H07RN-F1	25	196/0.4	1.4	12.7	15.8	380
H07RNF-1C-0350	H07RN-F1	35	276/0.4	1.4	14.3	17.9	515
H07RNF-1C-0500	H07RN-F1	50	396/0.4	1.6	16.5	20.6	710
H07RNF-1C-0700	H07RN-F1	70	360/0.5	1.6	18.6	23.3	955
H07RNF-1C-0950	H07RN-F1	95	475/0.5	1.8	20.8	26.0	1240
H07RNF-1C-1200	H07RN-F1	120	608/0.5	1.8	22.8	28.6	1540
H07RNF-1C-1500	H07RN-F1	150	756/0.5	2.0	25.2	31.4	1920
H07RNF-1C-1850	H07RN-F1	185	925/0.5	2.2	27.6	34.4	2330
H07RNF-1C-2400	H07RN-F1	240	1221/0.5	2.4	30.6	38.3	3040
H07RNF-1C-3000	H07RN-F1	300	1525/0.5	2.6	33.5	41.9	3720
H07RNF-1C-4000	H07RN-F1	400	2013/0.5	2.8	37.4	46.8	4790
H07RNF-1C-5000	H07RN-F1	500	1769/0.5	3.0	41.3	52.0	5970
<b>Two Core Type</b>							
H07RNF-2C-0010	H07RN-F2	1.0	32/0.20	0.8	7.7	10.0	116
H07RNF-2C-0015	H07RN-F2	1.5	30/0.25	0.8	8.5	11.0	147
H07RNF-2C-0025	H07RN-F2	2.5	50/0.25	0.9	10.2	13.1	210
H07RNF-2C-0040	H07RN-F2	4.0	56/0.3	1.0	11.8	15.1	275
H07RNF-2C-0060	H07RN-F2	6.0	84/0.3	1.0	13.1	16.8	350
H07RNF-2C-0100	H07RN-F2	10	80/0.4	1.2	17.7	22.6	640
H07RNF-2C-0160	H07RN-F2	16	126/0.4	1.2	20.2	25.7	850
H07RNF-2C-0250	H07RN-F2	25	196/0.4	1.4	24.3	30.7	1210

## H07RN-F

60°C 450/750 V

Anixter Number	Cenelec Code	Nominal Conductor Area mm <sup>2</sup>	Nominal Conductor Stranding #/mm	Insulation Thickness mm	Minimum O/D mm	Maximum O/D mm	Approximate Cable Weight kg/km
<b>Three Core Type</b>							
H07RNF-3C-0010	H07RN-F3	1.0	32/0.20	0.8	8.3	10.7	139
H07RNF-3C-0015	H07RN-F3	1.5	30/0.25	0.8	9.2	11.9	176
H07RNF-3C-0025	H07RN-F3	2.5	50/0.25	0.9	10.9	14.0	250
H07RNF-3C-0040	H07RN-F3	4.0	56/0.3	1.0	12.7	16.2	335
H07RNF-3C-0060	H07RN-F3	6.0	84/0.3	1.0	14.1	18.0	425
H07RNF-3C-0100	H07RN-F3	10	80/0.4	1.2	19.1	24.2	785
H07RNF-3C-0160	H07RN-F3	16	126/0.4	1.2	21.8	27.6	1060
H07RNF-3C-0250	H07RN-F3	25	196/0.4	1.4	26.1	33.0	1510
H07RNF-3C-0350	H07RN-F3	35	276/0.4	1.4	29.3	37.1	1970
H07RNF-3C-0500	H07RN-F3	50	396/0.4	1.6	34.1	42.9	2750
H07RNF-3C-0700	H07RN-F3	70	360/0.5	1.6	38.4	48.3	3680
H07RNF-3C-0950	H07RN-F3	95	475/0.5	1.8	43.3	54.0	4750
H07RNF-3C-1200	H07RN-F3	120	608/0.5	1.8	47.4	60.0	5860
H07RNF-3C-1500	H07RN-F3	150	765/0.5	2.0	52.0	66.0	7380
H07RNF-3C-1850	H07RN-F3	185	925/0.5	2.2	57.0	72.0	8960
H07RNF-3C-2400	H07RN-F3	240	1221/0.5	2.4	65.0	82.0	11540
H07RNF-3C-3000	H07RN-F3	300	1525/0.5	2.6	72.0	90.0	14290
<b>Four Core Type</b>							
H07RNF-4C-0010	H07RN-F4	1.0	32/0.20	0.8	9.2	11.9	170
H07RNF-4C-0015	H07RN-F4	1.5	30/0.25	0.8	10.2	13.1	220
H07RNF-4C-0025	H07RN-F4	2.5	50/0.25	0.9	12.1	15.5	295
H07RNF-4C-0040	H07RN-F4	4.0	56/0.3	1.0	14.0	17.9	420
H07RNF-4C-0060	H07RN-F4	6.0	84/0.3	1.0	15.7	20.0	540
H07RNF-4C-0100	H07RN-F4	10	80/0.4	1.2	20.9	26.5	960
H07RNF-4C-0160	H07RN-F4	16	126/0.4	1.2	23.8	30.1	1310
H07RNF-4C-0250	H07RN-F4	25	196/0.4	1.4	29.5	37.5	2020
H07RNF-4C-0350	H07RN-F4	35	276/0.4	1.4	32.5	41.1	2490
H07RNF-4C-0500	H07RN-F4	50	396/0.4	1.6	37.7	47.5	3490
H07RNF-4C-0700	H07RN-F4	70	360/0.5	1.6	42.7	54.0	4670
H07RNF-4C-0950	H07RN-F4	95	475/0.5	1.8	48.4	61.0	6120
H07RNF-4C-1200	H07RN-F4	120	608/0.5	1.8	53.0	66.0	7450
H07RNF-4C-1500	H07RN-F4	150	756/0.5	2.0	58.0	73.0	9400
H07RNF-4C-1850	H07RN-F4	185	925/0.5	2.2	64.0	80.0	11440
H07RNF-4C-2400	H07RN-F4	240	1221/0.5	2.4	72.0	91.0	14750
H07RNF-4C-3000	H07RN-F4	300	1525/0.5	2.6	80.0	101.0	18310

**H07RN-F**

60°C 450/750 V

Anixter Number	Cenelec Code	Nominal Conductor Area mm <sup>2</sup>	Nominal Conductor Stranding #/mm	Insulation Thickness mm	Minimum O/D mm	Maximum O/D mm	Approximate Cable Weight kg/km
<b>Five Core Type</b>							
H07RNF-5C-0010	H07RN-F5	1.0	32/0.20	0.8	10.2	13.1	198
H07RNF-5C-0015	H07RN-F5	1.5	30/0.25	0.8	11.2	14.4	255
H07RNF-5C-0025	H07RN-F5	2.5	50/0.25	0.9	13.3	17.0	350
H07RNF-5C-0040	H07RN-F5	4.0	56/0.3	1.0	15.6	19.8	515
H07RNF-5C-0060	H07RN-F5	6.0	84/0.3	1.0	17.5	22.2	660
H07RNF-5C-0100	H07RN-F5	10	80/0.4	1.2	22.9	29.1	1170
H07RNF-5C-0160	H07RN-F5	16	126/0.4	1.2	26.4	33.3	1610
H07RNF-5C-0250	H07RN-F5	25	196/0.4	1.4	32.0	40.0	2350
<b>Seven Core Type</b>							
H07RNF-7C-0015	H07RN-F7	1.5	30/0.25	0.8	13.4	17.2	310
H07RNF-7C-0025	H07RN-F7	2.5	50/0.25	0.9	15.7	20.0	460
<b>Twelve Core Type</b>							
H07RNF-12C-0015	H07RN-F12	1.5	30/0.25	0.8	17.6	22.4	500
H07RNF-12C-0025	H07RN-F12	2.5	50/0.25	0.9	20.6	26.2	750

## Technical Specifications for Flexible Cords

Applicable to: 2491X, 218\*Y, 318\*Y, 309\*Y, 318\*B, 318\*P, 318\*TQ, 398\*P  
H05V-K, H03V-F, H05VV-F, H05V2V2-F, H05Z1Z1-F, H05RN-F, H05BN4-F, H07RN-F

### CORRECTION FACTOR FOR AMBIENT TEMPERATURE

#### 60°C rubber and PVC cords:

Ambient air temp °C	35	40	45	50	55
Rating factor	0.91	0.82	0.71	0.58	0.41

#### 90°C rubber cords having a HOFR sheath or a heat-resisting PVC sheath and for 90°C heat-resisting PVC cords:

Ambient air temp °C	35 - 50	55	60	65	70
Rating factor	1.0	0.96	0.83	0.67	0.47

#### 180°C rubber cords:

Ambient air temp °C	35 - 150	155	160	165	170	175
Rating factor	1.0	0.92	0.82	0.71	0.57	0.40

#### For cables where four or more cores or loaded, the following factors should be applied:

No. of cores loaded	4	5	6	7	10	12	14	19	24
Rating factor	0.78	0.72	0.67	0.63	0.56	0.53	0.51	0.45	0.42
No. of cores loaded	27	30	37	-	-	-	-	-	-
Rating factor	0.40	0.39	0.36	-	-	-	-	-	-

These factors need not be applied if the number of cores loaded does not exceed the square root of the total number of cores in the cable.

# Technical Specifications for Flexible Cords

H05V-K, H03VV-F, H05VV-F, H05V2V2-F, H05Z1Z1-F, H05RN-F, H05BN4-F, H07RN-F

## CURRENT CARRYING CAPACITY (Amperes):

Conductor Cross Sectional Area 1	Current Carrying Capacity	
	Single Phase a.c. 2	Three Phase a.c. 3
mm <sup>2</sup>	A	A
0.5	3	3
0.75	6	6
1	10	10
1.25	13	-
1.5	16	16
2.5	25	20
4	32	25

## VOLTAGE DROP (per Ampere per metre):

Conductor operating temperature: 60°C\*

Conductor Cross Sectional Area 1	d.c. or Single Phase a.c. 2	Three Phase a.c. 3
mm <sup>2</sup>	mV	mV
0.5	93	80
0.75	62	54
1	46	40
1.25	37	-
1.5	32	27
2.5	19	16
4	12	10

\*NOTE: The tabulated values above are for 60°C rubber insulated and PVC-insulated flexible cords and for other types of flexible cords they are to be multiplied by the following factors:

For 90°C rubber or PVC insulated 1.09.

180°C rubber insulated 1.31.

# Technical Specifications for “H07RN-F”

The ratings do not apply if the cable is protected by a semi-enclosed fuse to BS3036.

For further guidance refer to the BS7671 Requirements for Electrical Installations (IEE Wiring Regulations - latest edition).

For ambient air temperature other than 30°C the following rating factors should be applied:

Ambient air temp °C	25	30	35	40	45	50	55
Rating factor	1.04	1.0	0.91	0.82	0.71	0.58	0.41

Ambient temperature: 30°C.

Conductor operating temperature: 60°C.

NOTE: The current ratings tabulated are for cables in free air but may also be used for cables resting on a surface.

## VOLTAGE DROP (per Ampere per metre):

Conductor Cross Sectional Area mm <sup>2</sup>	Two Core Cable d.c.		Two Core Cable Single Phase a.c.			1 Three Core, Four Core or Five Core Cable Three Phase a.c.		
	mV		mV			mV		
4	12		12			10		
6	7.8		7.8			6.7		
10	4.6		4.6			4.0		
16	2.9		2.9			2.5		
			r	x	z	r	x	z
25	1.80		1.80	0.175	1.85	1.55	0.150	1.55
35	-		-	-	-	1.10	0.150	1.15
50	-		-	-	-	0.83	0.145	0.84
70	-		-	-	-	0.57	0.140	0.58
95	-		-	-	-	0.42	0.135	0.44
120	-		-	-	-	0.33	0.135	0.36
150	-		-	-	-	0.27	0.130	0.30
185	-		-	-	-	0.22	0.130	0.26
240	-		-	-	-	0.170	0.130	0.21
300	-		-	-	-	0.135	0.125	0.185
400	-		-	-	-	-	-	-
500	-		-	-	-	-	-	-
630	-		-	-	-	-	-	-

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# Technical Specifications for “H07RN-F”

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## CURRENT CAPACITY (per Ampere per metre):

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Conductor Cross Sectional Area	Single Phase a.c. or d.c. (1 two core cable, with or without protective conductor)	Three Phase a.c. (1 three core, four core or five core cable)	Single Phase a.c. or d.c. 2 Single-Core Cables Touching
mm <sup>2</sup>	A	A	A
4	30	26	-
6	39	34	-
10	51	47	-
16	73	63	-
25	97	83	-
35	-	102	140
50	-	124	175
70	-	158	216
95	-	192	258
120	-	222	302
150	-	255	347
185	-	291	394
240	-	343	471
300	-	394	541
400	-	-	644
500	-	-	738
630	-	-	861

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## Two Single-Core Cables Touching

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d.c.	Single Phase a.c.*		
mV	mV		
	r	x	z
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
1.31	1.31	0.21	1.32
0.91	0.91	0.21	0.93
0.64	0.64	0.20	0.67
0.49	0.49	0.195	0.53
0.38	0.38	0.190	0.43
0.31	0.31	0.190	0.36
0.25	0.25	0.190	0.32
0.190	0.195	0.185	0.27
0.150	0.155	0.180	0.24
0.115	0.120	0.175	0.21
0.090	0.099	0.170	0.20
0.068	0.079	0.170	0.185

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\* A larger voltage drop will result if cables are spaced.



## GUIDE TO MINIMUM BENDING RADII ON FLEXIBLE CORDS AND CABLES

Cable Type	Cable Diameter (mm)			
	$\leq 8 \leq$	$> 8 \leq 12$	$> 12 \leq 20$	$> 20$
	M.B.R. (Minimum Bending Radius)			
<b>Flexible Cable Thermoplastic (e.g. PVC)</b>				
Fixed installation	3D	3D	4D	4D
Free movement*	5D	5D	6D	6D
<b>Flexible Cable Elastomeric (e.g. rubber)</b>				
Fixed installation	3D	3D	4D	4D
Free movement*	4D	4D	5D	6D

Where D = cable diameter.

The above values are based on recommendations given in BS7540 "Use of cables with a rated voltage not exceeding 450/750 V".

\*These values do not apply to cables used on festoon, reeling drum, cranes, robotics, etc., where repetitive flexing and/or twisting is anticipated.

For further details refer to BS7540.