

# TECHNICAL DATA SHEET

## HVCRC® 160 - 47 Epsilon Advanced Conductors


**EPSILON**  
CABLE

International size	JAIPUR
ASTM Size	-
Technical designation	ECRC® 160-AL0/47-S1



Governing Units: Metric

### STRANDING CONFIGURATION

	No. & Diameter of HVCRC core	1 x 7.75	mm
	Aluminium Layers Construction / height	24 TW x	2.19 mm
	1st layer composition and $\phi_{eq}$	10 x	2.84 mm
	2nd layer composition and $\phi_{eq}$	14 x	2.87 mm
	Lay Direction of outer layer	Right Hand (Z)	

### CONDUCTOR PROPERTIES

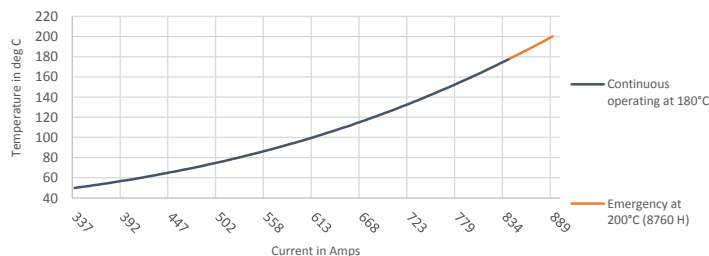
Cross Sectional Area - Annealed Aluminium	153.8	mm <sup>2</sup>
Cross Sectional Area - HVCRC Core	47.2	mm <sup>2</sup>
Total Area of Conductor Cross Section	201.0	mm <sup>2</sup>
Nominal equivalent Aluminium Area (1350-H19 at 61%IACS)	158.9	mm <sup>2</sup>
Overall Diameter of Conductor	16.51	mm
Mass per unit length - Annealed Aluminium	425.9	kg/km
Mass per unit length - Core	87.3	kg/km
Mass per unit length - Conductor	513.2	kg/km
Ultimate Tensile Strength of Conductor	115.1	kN
Core Rated Tensile Strength	105.8	kN
Coefficient of Linear Expansion <b>Above</b> Thermal Kneepoint	1.3	10 <sup>-6</sup> K <sup>-1</sup>
Coefficient of Linear Expansion <b>Below</b> Thermal Kneepoint	14.17	10 <sup>-6</sup> K <sup>-1</sup>
Final Modulus of Elasticity <b>Above</b> Thermal Kneepoint	123	GPa
Final Modulus of Elasticity <b>Below</b> Thermal Kneepoint	71	GPa

### THERMAL SPECIFICATIONS

Maximum Continuous Operating Temperature <sup>(2)</sup> (surface temperature)	180	°C
Maximum Emergency Temperature / 8760 Hours <sup>(2)</sup> (surface temperature)	200	°C
Thermal Heat Capacity for Annealed Aluminium Layers	406.7	W.s/m.°C
Thermal Heat Capacity for Composite Core	69.8	W.s/m.°C

### ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C (1370-O at 63%IACS)	0.1822	Ω.km <sup>-1</sup>
Temperature Coefficient of Resistance	4.03	10 <sup>-3</sup> K <sup>-1</sup>
AC Nominal Resistance at 25°C (surface temperature)	0.1863	Ω.km <sup>-1</sup>
AC Nominal Resistance at 75°C (surface temperature)	0.2230	Ω.km <sup>-1</sup>
AC Nominal Resistance at 160°C (surface temperature)	0.2853	Ω.km <sup>-1</sup>
AC Nominal Resistance at 180°C (surface temperature)	0.3000	Ω.km <sup>-1</sup>
AC Nominal Resistance at 200°C (surface temperature)	0.3146	Ω.km <sup>-1</sup>
AC Current Rating at 160°C (surface temperature) <sup>(1)</sup>	796	A
AC Current Rating at 180°C (surface temperature) <sup>(1)</sup>	844	A
AC Current Rating at 200°C (surface temperature) <sup>(1)</sup>	889	A



(1) Ampacity calculations based on IEEE Standard 738-2012, according to the following data:

25 °C ambient temperature,	0.61 m/s wind velocity with an angle of 90 °,
1000 W/m <sup>2</sup> solar radiation,	0.5 solar absorption coefficient,
0.6 emissivity coefficient,	Resistance AC at 50 Hz current frequency.

(2) Temperatures defined according to ASTM B987-20.

Reference standards for core properties: ASTM B987-20.

Reference standards for electrical specifications: IEC 62219.

Reference standards for stranding parameters: ASTM B857-14/IEC 62219.

Depending on conductor manufacturer rated specifications may slightly change.

### Geometric Mean Radius (GMR)

6.97 mm

### Inductive Reactance Ø0.3m radius

0.237 Ω.km<sup>-1</sup>

### Capacitive Reactance Ø0.3m radius

0.207 MΩ.km

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