

TECHNICAL DATA SHEET
HVCRC® 180 - 40
 Epsilon Advanced Conductors

EPSILON
CABLE

International size	ZADAR
ASTM Size	-
Technical designation	ECRC® 180-AL0/40-S1



Governing Units: Metric

STRANDING CONFIGURATION

	No. & Diameter of HVCRC core	1 x 7.11	mm
	Aluminium Layers Construction / height	17 TW x	2.50 mm
	1st layer composition and ϕ_{eq}	7 x	3.59 mm
	2nd layer composition and ϕ_{eq}	10 x	3.69 mm
	Lay Direction of outer layer	Right Hand (Z)	

CONDUCTOR PROPERTIES

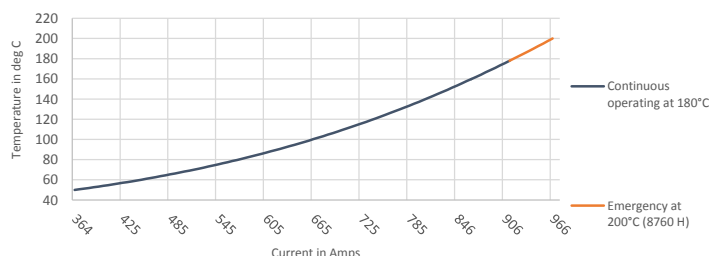
Cross Sectional Area - Annealed Aluminium	177.6	mm ²
Cross Sectional Area - HVCRC Core	39.7	mm ²
Total Area of Conductor Cross Section	217.3	mm ²
Nominal equivalent Aluminium Area (1350-H19 at 61%IACS)	183.4	mm ²
Overall Diameter of Conductor	17.09	mm
Mass per unit length - Annealed Aluminium	491.4	kg/km
Mass per unit length - Core	73.5	kg/km
Mass per unit length - Conductor	564.9	kg/km
Ultimate Tensile Strength of Conductor	99.7	kN
Core Rated Tensile Strength	89.1	kN
Coefficient of Linear Expansion Above Thermal Kneepoint	1.3	10 ⁻⁶ K ⁻¹
Coefficient of Linear Expansion Below Thermal Kneepoint	15.77	10 ⁻⁶ K ⁻¹
Final Modulus of Elasticity Above Thermal Kneepoint	123	GPa
Final Modulus of Elasticity Below Thermal Kneepoint	67	GPa

THERMAL SPECIFICATIONS

Maximum Continuous Operating Temperature ⁽²⁾ (surface temperature)	180	°C
Maximum Emergency Temperature / 8760 Hours ⁽²⁾ (surface temperature)	200	°C
Thermal Heat Capacity for Annealed Aluminium Layers	469.3	W.s/m.°C
Thermal Heat Capacity for Composite Core	58.8	W.s/m.°C

ELECTRICAL SPECIFICATIONS

Maximum DC Electrical Resistance at 20°C (1370-O at 63%IACS)	0.1578	Ω.km ⁻¹
Temperature Coefficient of Resistance	4.03	10 ⁻³ K ⁻¹
AC Nominal Resistance at 25°C (surface temperature)	0.1615	Ω.km ⁻¹
AC Nominal Resistance at 75°C (surface temperature)	0.1932	Ω.km ⁻¹
AC Nominal Resistance at 160°C (surface temperature)	0.2472	Ω.km ⁻¹
AC Nominal Resistance at 180°C (surface temperature)	0.2599	Ω.km ⁻¹
AC Nominal Resistance at 200°C (surface temperature)	0.2726	Ω.km ⁻¹
AC Current Rating at 160°C (surface temperature) ⁽¹⁾	864	A
AC Current Rating at 180°C (surface temperature) ⁽¹⁾	917	A
AC Current Rating at 200°C (surface temperature) ⁽¹⁾	966	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 ² 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)

7.10 mm

Inductive Reactance Ø0.3m radius

 0.236 Ω.km⁻¹
Capacitive Reactance Ø0.3m radius

0.205 MΩ.km

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