

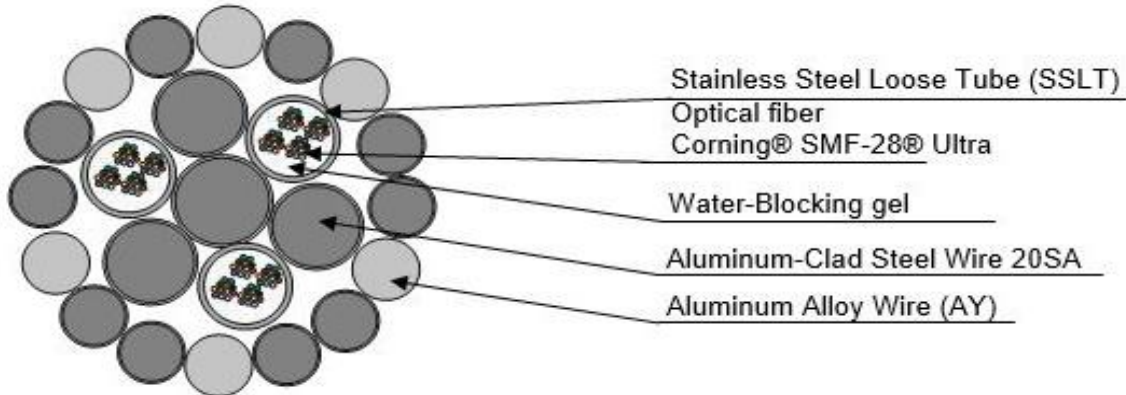


Product Datasheet № 0113-012026
Optical Ground Wire (OPGW)

OPGW S 144U (3x48) 15.8mm 91kA2-s 119kN

Part number # 0113-79480

Construction



Design

Construction element	Material	Count	Diameter	
			Metric (mm)	Customary (inches)
Center member	20% ACS wire	1	3.75	0.1476
1st stranded layer	20% ACS wire/SSLT	3/3	3.50	0.1378
2nd stranded layer	20% ACS wire/SSLT	10/6	2.50	0.0984

Technical Specifications

Mechanical	Metric	Customary
Cable diameter	15.8 mm	0.620 in
Cable unit weight	749 kg/km	0.503 lb/ft
Rated breaking strength (RBS) (without SSLT's)	119.0 kN	26,764 lb
Maximum rated design tension (MRDT) (80% RBS)	95.5 kN	21,473 lb
with 0% fiber strain		
Zero fiber strain margin (ZFSM) (80% RBS)	95.5 kN	21,473 lb
Cross-sectional area of ACS wire	95.2 mm ²	0.148 in ²
Cross-sectional area of AY wire	29.5 mm ²	0.046 in ²
Cable total cross-sectional area	124.7 mm ²	0.193 in ²
Modulus of Elasticity, initial	108.2 kN/mm ²	15,696 ksi
Modulus of Elasticity, final	129.8 kN/mm ²	18,829 ksi
Temperature coefficient of linear expansion	13.95 E ⁻⁶ /°C	7.75 E ⁻⁶ /°F
Southwire Sag10™ coefficient chart number	1-1423	-
Lay direction of outer layer	Left	-

Electrical	Metric	Customary
DC resistance at 20°C (68°F)	0.508 Ω /km	0.8174 Ω /mile
Short current circuit capacity	91.2 kA ² ·s	-
Basis: Initial cable temp = 40°C (104°F), Final = 210°C (410°F), Duration = 1 s		
Short current circuit for 1 sec	9.6 kA	-
R_{ac}/R_{dc} ratio	1.012	-
AC resistance at 25°C (77°F)	0.5228 Ω /km	0.8414 Ω /mile
AC resistance at 50°C (122°F)	0.5683 Ω /km	0.9145 Ω /mile
AC resistance at 75°C (167°F)	0.6137 Ω /km	0.9876 Ω /mile
Geometric Mean Radius (GMR)	2.1571 mm	0.0071 ft
Inductive Reactance (X_a) @ 60 Hz	0.3733 Ω /km	0.6008 Ω /mile
Capacitive Reactance (X'_a) @ 60 Hz	0.1745 M Ω -km	0.1084 M Ω -mile

Optical	
ITU-T fiber compliance	G.652D & G.657.A1
Fiber manufacturer	Corning SMF-28 ULTRA
Number of optical fibers in total (Actual/Maximum)	144/144
Number of optical fibers per SSLT	48

Color identification of the fibers in each SSLT:

Fiber	Color of the fibers 1-12	Fiber	Color of the fibers 13-24
1	Blue	13	Blue + 1 ring
2	Orange	14	Orange + 1 ring
3	Green	15	Green + 1 ring
4	Brown	16	Brown + 1 ring
5	Gray	17	Gray + 1 ring
6	White	18	White + 1 ring
7	Red	19	Red + 1 ring
8	Black	20	Natural + 1 ring
9	Yellow	21	Yellow + 1 ring
10	Violet	22	Violet + 1 ring
11	Pink	23	Pink + 1 ring
12	Turquoise	24	Turquoise + 1 ring

Fiber	Color of the fibers 25-36	Fiber	Color of the fibers 37-48
25	Blue + 2 ring	37	Blue + 3 ring
26	Orange + 2 ring	38	Orange + 3 ring
27	Green + 2 ring	39	Green + 3 ring
28	Brown + 2 ring	40	Brown + 3 ring
29	Slate + 2 ring	41	Slate + 3 ring
30	White + 2 ring	42	White + 3 ring
31	Red + 2 ring	43	Red + 3 ring
32	Natural + 2 ring	44	Natural + 3 ring
33	Yellow + 2 ring	45	Yellow + 3 ring
34	Violet + 2 ring	46	Violet + 3 ring
35	Rose + 2 ring	47	Rose + 3 ring
36	Aqua + 2 ring	48	Aqua + 3 ring

Color identification of the binding yarns for bundles of 12-fibers:

Bundle	Fiber	Color of the yarns
1	1-12	Blue
2	13-24	Orange
3	25-36	Green
4	37-48	Brown

Color identification of SSLT's:

Tube	Color of addition identification yarn
1	Blue
2	Orange
3	Green

Fiber Dimensional Specifications:

ITU-T fiber compliance	G.652D
Core-Clad Concentricity	0.5 μ m
Cladding Diameter	125 $\pm$ 0.7 μ m
Cladding Non-Circularity	0.7%
Coating Diameter	242 $\pm$ 5 μ m

Final Maximum Individual Attenuation Limits:

Wavelength		dB/km
1310 nm		0.34
1383 nm		0.34
1490 nm		0.23
1550 nm		0.20
1625 nm		0.22

Packaging and Handling	Metric	Customary
Maximum available reel length	5,940 m	19,488 ft
Minimum bending radius, no load (tension < 5% RBS)	229 mm	9 in
Minimum bending radius, loaded (tension $\geq$ 5% RBS)	254 mm	10 in
Standard sheave diameter: first, last, angles $\geq$ 60°	635 mm	25 in
Standard sheave diameter: tangents and angles $\leq$ 60°	406 mm	16 in

Operating Parameters	Metric	Customary
Operation temperature	-50°C ... +85°C	-58°F ... +185°F
Installation temperature	-30°C ... +50°C	-22°F ... +122°F
Transportation and storage temperature	-50°C ... +70°C	-58°F ... +158°F
Design life	50 years	

Standards	International	USA
ACS wire	IEC 61232	ASTM B415
AY wire	IEC 60104	ASTM B398
OPGW cable	IEC 60794	IEEE 1138

Key Performance Testing		
Parameter	Nominal Value	Evaluation criterion
Tensile strength (IEC 60794-1-2 method E1)	95.5 kN	$\Delta\alpha^* \leq 0.05$ dB; no damage
Crush (IEC 60794-1-2 method E3)	1.0 kN/cm	
Repeated bending (IEC 60794-1-2 method E6)	20 cycles @ bending radius	
Torsion (IEC 60794-1-2 method E7)	10 cycles @ torsion angle $\pm 360^\circ$ applied over 4 m	
Impact (IEC 60794-1-2 method E4)	Impact energy 20 J	No water through end of cable
Water penetration (IEC 60794-1-2 method F5B)	3 m for 24 hours	
Temperature cycling (IEC 60794-1-2 method F1)	-50°C to +85°C for 3 cycles over ≥ 24 hours	$\Delta\alpha^* \leq 0.05$ dB/km
Compound flow (IEC 60794-1-2 method E14)	70°C	No dripped compound

* - attenuation increase at standard wavelengths.

Packing and Marking Notes
- Standard packaging is non-returnable wooden reels. - Drum diameter $\geq 40 \times$ cable OD. ≥ 2 m inside end of the cable is affixed to flange. - Cable ends sealed with waterproof covers. - Flange labelling will include the cable type, production date, ordered/actual cable lengths, gross weight. - Additional flange marking: drum number, notice "do not lay flat!", rotation direction - Certificate of Compliance (CoC) for each reel contains type of the cable, technical standard number, cable length, fiber type, fiber coloring, fibers/SSLT, SSLT identification coloring, final attenuation for all fibers, refractive index of the fiber, fiber manufacturer and production date. - CoC in plastic bag is fixed on the inner flange. Additional information for the CoC upon request.

All values are nominal and are subject to normal manufacturing tolerances and to change without notice.