# 28kV AL 133% EPR (EAM) One-Third Neutral LLDPE

Single Conductor, 345 Mils Ethylene Propylene Rubber (EPR) / Ethylene Alkene Copolymer (EAM), 133% Insulation Level, One-third Concentric Neutral, Linear Low Density Polyethylene (LLDPE) Jacket. Silicone Free




Image not to scale. See Table 1 for dimensions.

## CONSTRUCTION:

1. **Conductor:** Moisture blocked class B compressed Aluminum ASTM B231 1350 ¾ hard H16/H26 ( Non Moisture Blocked Optional )
2. **Conductor Shield:** Conventional Semi-conducting cross-linked copolymer; A conductor tape is used for cable size larger than or equal to 1500 Kcmil
3. **Insulation:** 345 Mils Ethylene Propylene Rubber (EPR) / Ethylene Alkene Copolymer (EAM) 133% insulation level
4. **Insulation Shield:** Strippable semi-conducting cross-linked copolymer
5. **Concentric Neutral:** Helically applied soft drawn bare copper one-third concentric neutral
6. **Overall Jacket:** Linear Low Density Polyethylene (LLDPE) Jacket, black with red extruded stripes; PowerGlide® LLDPE jacket optional

## APPLICATIONS AND FEATURES:

Southwire's 28kV cables are suited for use in wet and dry areas, conduits, ducts, direct burial, sunlight, and where superior electrical properties are desired. These cables are capable of operating continuously at the conductor temperature not in excess of 105°C for normal operation. 140°C for emergency overload, and 250°C for short circuit conditions. Jacket types available that can be installed in conduit without the aid of lubrication. Rated for 1000 lbs./FT maximum sidewall pressure.

## SPECIFICATIONS:

- ASTM B231 Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors
- ASTM B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes
- ICEA S-94-649 Standard for Concentric Neutral Cables Rated 5 - 46kV
- AEIC CS-8 Specification for extruded dielectric shielded power cables rated for 5 through 46KV (Qualification Test Requirements)
- Rural Utility Standard RUS 1728F-U1 or 1728.204 (Electric standards and specifications for materials and construction)
- UL 1072 Listed as MV 90 When Specified
- Optional CSA 68.5: -40ºC and MV 90ºC optional marking available upon request

## SAMPLE PRINT LEGEND:

SOUTHWIRE HI-DRI(R) [CONDUCTOR SIZE] [AWG or KCMIL] AL 28000 VOLTS EPR INSULATION 345 MILS -- (NESC) -- SOUTHWIRE {MMM} {YYYY} NON-CONDUCTING JACKET

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## Table 1 – Weights and Measurements

| Cond. Size | Diameter Over Conductor | Diameter Over Insulation | Insul. Thickness | Diameter Over Insulation Shield | Concentric Neutral | Neutral DC Resistance 25°C | Jacket Thickness | Approx. OD | Approx. Weight | Min Bending Radius | Max Pull Tension |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | inch | inch | mil | inch | No. x AWG | Ω /1000ft | mil | inch | lb / 1000ft | inch | lb |
| 1 (SOLID) | 0.289 | 1.017 | 345 | 1.137 | 6x14 | 0.54 | 50 | 1.365 | 809 | 9.6 | 502 |
| 1 (19) | 0.322 | 1.05 | 345 | 1.17 | 6x14 | 0.54 | 50 | 1.398 | 837 | 9.8 | 502 |
| 1/0 (SOLID) | 0.325 | 1.053 | 345 | 1.173 | 6x14 | 0.54 | 50 | 1.401 | 859 | 9.8 | 633 |
| 1/0 (19) | 0.352 | 1.08 | 345 | 1.2 | 6x14 | 0.54 | 50 | 1.428 | 882 | 10 | 633 |
| 2/0 (19) | 0.395 | 1.123 | 345 | 1.243 | 7x14 | 0.463 | 50 | 1.471 | 957 | 10.3 | 798 |
| 3/0 (19) | 0.443 | 1.171 | 345 | 1.291 | 9x14 | 0.36 | 50 | 1.519 | 1057 | 10.6 | 1006 |
| 4/0 (19) | 0.498 | 1.226 | 345 | 1.346 | 11x14 | 0.295 | 50 | 1.574 | 1169 | 11 | 1269 |
| 250 (37) | 0.558 | 1.294 | 345 | 1.414 | 13x14 | 0.249 | 75 | 1.692 | 1367 | 11.8 | 1500 |
| 350 (37) | 0.661 | 1.397 | 345 | 1.517 | 18x14 | 0.18 | 75 | 1.795 | 1618 | 12.6 | 2100 |
| 500 (37) | 0.789 | 1.525 | 345 | 1.675 | 25x14 | 0.13 | 75 | 1.953 | 2011 | 13.7 | 3000 |
| 750 (61) | 0.968 | 1.714 | 345 | 1.864 | 24x12 | 0.085 | 75 | 2.176 | 2603 | 15.2 | 4500 |
| 1000 (61) | 1.117 | 1.863 | 345 | 2.013 | 20x10 | 0.064 | 75 | 2.367 | 3147 | 16.6 | 6000 |

All dimensions are nominal and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* Pulling tension based on pulling eye directly connected to conductor
TBA stock codes are estimations only and actual product may vary. Please wait until a stock code is assigned to purchase connectors and/or fittings.


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## Table 2 – Electrical and Engineering Data

| Cond. Size | DC Resistance @ 25°C | AC Resistance @ 90°C | Capacitive Reactance @ 60Hz | Inductive Reactance @ 60Hz | Charging Current | Dielectric Loss | Zero Sequence Impedance | Positive Sequence Impedance | Short Circuit Current @ 30 Cycle | Allowable Ampacity in Duct 90°C | Allowable Ampacity Directly Buried 90°C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | Ω/1000ft | Ω/1000ft | MΩ*1000ft | Ω/1000ft | A/1000ft | W/1000ft | Ω/1000ft | Ω/1000ft | Amp | Amp | Amp |
| 1 (SOLID) | 0.129 | 0.177 | 0.059 | 0.057 | 0.27 | 4.4 | 0.511+j0.279 | 0.178+j0.060 | 2095 | 140 | 175 |
| 1 (19) | 0.211 | 0.289 | 0.056 | 0.055 | 0.29 | 4.7 | 0.622+j0.280 | 0.290+j0.061 | 2095 | 140 | 175 |
| 1/0 (SOLID) | 0.102 | 0.14 | 0.056 | 0.055 | 0.29 | 4.7 | 0.473+j0.277 | 0.141+j0.058 | 2095 | 155 | 195 |
| 1/0 (19) | 0.167 | 0.229 | 0.053 | 0.054 | 0.3 | 4.9 | 0.562+j0.278 | 0.230+j0.059 | 2095 | 155 | 195 |
| 2/0 (19) | 0.133 | 0.182 | 0.05 | 0.052 | 0.33 | 5.3 | 0.496+j0.232 | 0.183+j0.057 | 2444 | 180 | 220 |
| 3/0 (19) | 0.105 | 0.144 | 0.046 | 0.05 | 0.35 | 5.6 | 0.421+j0.170 | 0.146+j0.055 | 3142 | 200 | 250 |
| 4/0 (19) | 0.084 | 0.115 | 0.043 | 0.048 | 0.37 | 6.1 | 0.359+j0.130 | 0.117+j0.053 | 3840 | 235 | 285 |
| 250 (37) | 0.07 | 0.096 | 0.04 | 0.047 | 0.41 | 6.6 | 0.312+j0.105 | 0.098+j0.052 | 4538 | 256 | 309 |
| 350 (37) | 0.051 | 0.07 | 0.036 | 0.045 | 0.45 | 7.4 | 0.235+j0.069 | 0.073+j0.050 | 6284 | 310 | 370 |
| 500 (37) | 0.036 | 0.05 | 0.031 | 0.043 | 0.51 | 8.3 | 0.173+j0.047 | 0.054+j0.047 | 8727 | 370 | 445 |
| 750 (61) | 0.023 | 0.033 | 0.027 | 0.04 | 0.6 | 9.7 | 0.116+j0.032 | 0.039+j0.044 | 13298 | 460 | 525 |
| 1000 (61) | 0.017 | 0.025 | 0.024 | 0.039 | 0.67 | 10.8 | 0.088+j0.027 | 0.033+j0.041 | 17615 | 520 | 575 |

*Ampacities for Direct Buried are based on ICEA P-117-734-2016 Single-Conductor Solid Dielectric 15-35kV. Single Circuit Flat Direct Buried Figure 3
*Ampacities for Duct are based on ICEA P-117-734-2016 for Single-Conductor Solid Dielectric 15-35kV. Single Circuit Trefoil Conduit Figure 7.
*Sequence Impedance values are based on Rho Earth Resistivity: 100 Ohm-Meter/1000ft, Spacing: one diameter spacing center-to-center.


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## Table 3 – Weights and Measurements (Metric)

| Cond. Size | Diameter Over Conductor | Diameter Over Insulation | Insul. Thickness | Diameter Over Insulation Shield | Concentric Neutral | Neutral DC Resistance 25°C | Jacket Thickness | Approx. OD | Approx. Weight | Min Bending Radius | Max Pull Tension |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | mm | mm | mm | mm | No. x AWG | Ω/km | mm | mm | kg/km | mm | newton |
| 1 (SOLID) | 7.34 | 25.83 | 8.76 | 28.88 | 6x14 | 1.77 | 1.27 | 34.67 | 1204 | 243.84 | 2234 |
| 1 (19) | 8.18 | 26.67 | 8.76 | 29.72 | 6x14 | 1.77 | 1.27 | 35.51 | 1246 | 248.92 | 2234 |
| 1/0 (SOLID) | 8.25 | 26.75 | 8.76 | 29.79 | 6x14 | 1.77 | 1.27 | 35.59 | 1278 | 248.92 | 2817 |
| 1/0 (19) | 8.94 | 27.43 | 8.76 | 30.48 | 6x14 | 1.77 | 1.27 | 36.27 | 1313 | 254.00 | 2817 |
| 2/0 (19) | 10.03 | 28.52 | 8.76 | 31.57 | 7x14 | 1.52 | 1.27 | 37.36 | 1424 | 261.62 | 3551 |
| 3/0 (19) | 11.25 | 29.74 | 8.76 | 32.79 | 9x14 | 1.18 | 1.27 | 38.58 | 1573 | 269.24 | 4477 |
| 4/0 (19) | 12.65 | 31.14 | 8.76 | 34.19 | 11x14 | 0.97 | 1.27 | 39.98 | 1740 | 279.40 | 5647 |
| 250 (37) | 14.17 | 32.87 | 8.76 | 35.92 | 13x14 | 0.82 | 1.91 | 42.98 | 2034 | 299.72 | 6675 |
| 350 (37) | 16.79 | 35.48 | 8.76 | 38.53 | 18x14 | 0.59 | 1.91 | 45.59 | 2408 | 320.04 | 9345 |
| 500 (37) | 20.04 | 38.73 | 8.76 | 42.55 | 25x14 | 0.43 | 1.91 | 49.61 | 2993 | 347.98 | 13350 |
| 750 (61) | 24.59 | 43.54 | 8.76 | 47.35 | 24x12 | 0.28 | 1.91 | 55.27 | 3874 | 386.08 | 20025 |
| 1000 (61) | 28.37 | 47.32 | 8.76 | 51.13 | 20x10 | 0.21 | 1.91 | 60.12 | 4683 | 421.64 | 26700 |

All dimensions are nominal and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* Pulling tension based on pulling eye directly connected to conductor
TBA stock codes are estimations only and actual product may vary. Please wait until a stock code is assigned to purchase connectors and/or fittings.


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## Table 4 – Electrical and Engineering Data (Metric)

| Cond. Size | DC Resistance @ 25°C | AC Resistance @ 90°C | Capacitive Reactance @ 60Hz | Inductive Reactance @ 60Hz | Charging Current | Dielectric Loss | Zero Sequence Impedance* | Positive Sequence Impedance* | Short Circuit Current @ 30 Cycle | Allowable Ampacity in Duct 90°C | Allowable Ampacity Directly Buried 90°C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AWG/ Kcmil | Ω/km | Ω/km | MΩ*km | Ω/km | A/km | W/km | Ω/1000ft | Ω/1000ft | Amp | Amp | Amp |
| 1 (SOLID) | 0.4232 | 0.58 | 0.0180 | 0.1870 | 0.886 | 14.4357 | 0.511+j0.279 | 0.178+j0.060 | 2095 | 140 | 175 |
| 1 (19) | 0.6923 | 0.95 | 0.0171 | 0.1804 | 0.951 | 15.4199 | 0.622+j0.280 | 0.290+j0.061 | 2095 | 140 | 175 |
| 1/0 (SOLID) | 0.3346 | 0.46 | 0.0171 | 0.1804 | 0.951 | 15.4199 | 0.473+j0.277 | 0.141+j0.058 | 2095 | 155 | 195 |
| 1/0 (19) | 0.5479 | 0.75 | 0.0162 | 0.1772 | 0.984 | 16.0761 | 0.562+j0.278 | 0.230+j0.059 | 2095 | 155 | 195 |
| 2/0 (19) | 0.4364 | 0.60 | 0.0152 | 0.1706 | 1.083 | 17.3885 | 0.496+j0.232 | 0.183+j0.057 | 2444 | 180 | 220 |
| 3/0 (19) | 0.3445 | 0.47 | 0.0140 | 0.1640 | 1.148 | 18.3727 | 0.421+j0.170 | 0.146+j0.055 | 3142 | 200 | 250 |
| 4/0 (19) | 0.2756 | 0.38 | 0.0131 | 0.1575 | 1.214 | 20.0131 | 0.359+j0.130 | 0.117+j0.053 | 3840 | 235 | 285 |
| 250 (37) | 0.2297 | 0.31 | 0.0122 | 0.1542 | 1.345 | 21.6535 | 0.312+j0.105 | 0.098+j0.052 | 4538 | 256 | 309 |
| 350 (37) | 0.1673 | 0.23 | 0.0110 | 0.1476 | 1.476 | 24.2782 | 0.235+j0.069 | 0.073+j0.050 | 6284 | 310 | 370 |
| 500 (37) | 0.1181 | 0.16 | 0.0094 | 0.1411 | 1.673 | 27.2310 | 0.173+j0.047 | 0.054+j0.047 | 8727 | 370 | 445 |
| 750 (61) | 0.0755 | 0.11 | 0.0082 | 0.1312 | 1.969 | 31.8241 | 0.116+j0.032 | 0.039+j0.044 | 13298 | 460 | 525 |
| 1000 (61) | 0.0558 | 0.08 | 0.0073 | 0.1280 | 2.198 | 35.4331 | 0.088+j0.027 | 0.033+j0.041 | 17615 | 520 | 575 |

*Ampacities for Direct Buried are based on ICEA P-117-734-2016 Single-Conductor Solid Dielectric 15-35kV. Single Circuit Flat Direct Buried Figure 3
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Concentric Neutral Calculator

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