# 28kV AL 100% TRXLPE One-Third Neutral LLDPE Primary UD

Single Conductor, 280 Mils Tree Retardant Cross Linked Polyethylene, 100% Insulation Level, One-third Concentric Neutral, Linear Low Density Polyethylene (LLDPE) Jacket


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; Supersmooth conductor shield optional; A conductor tape is used for cable size larger than or equal to 1500 Kcmil
3. **Insulation:** 280 Mils Tree Retardant Cross Linked Polyethylene 100% 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, troughs, trays, 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 90°C for normal operation. 130°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
- UL 1072 - Listed Listed as MV 90 When Specified

## SAMPLE PRINT LEGEND:

SOUTHWIRE HI-DRI(R) [CONDUCTOR SIZE] [AWG or KCMIL] AL 28000 VOLTS TRXLPE INSULATION 280 MILS -- (NESC) -- SOUTHWIRE {MMM} {YYYY} NON-CONDUCTING JACKET

## Table 1 – Weights and Measurements

| Stock Number | 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 |
| TBA | 1 (1) | 0.289 | 0.886 | 280 | 0.966 | 6x14 | 0.438 | 50 | 1.194 | 580 | 14.3 | 502 |
| TBA | 1 (19) | 0.322 | 0.919 | 280 | 0.999 | 6x14 | 0.438 | 50 | 1.227 | 611 | 14.7 | 502 |
| TBA | 1/0 (1) | 0.325 | 0.922 | 280 | 1.002 | 6x14 | 0.438 | 50 | 1.230 | 621 | 14.8 | 634 |
| TBA | 1/0 (19) | 0.352 | 0.949 | 280 | 1.029 | 6x14 | 0.438 | 50 | 1.257 | 647 | 15.1 | 634 |
| TBA | 2/0 (19) | 0.395 | 0.992 | 280 | 1.072 | 7x14 | 0.376 | 50 | 1.300 | 712 | 15.6 | 799 |
| TBA | 3/0 (19) | 0.443 | 1.040 | 280 | 1.120 | 9x14 | 0.292 | 50 | 1.348 | 797 | 16.2 | 1007 |
| 618979 | 4/0 (19) | 0.498 | 1.095 | 280 | 1.195 | 11x14 | 0.239 | 50 | 1.423 | 918 | 17.1 | 1270 |
| TBA | 250 (37) | 0.558 | 1.164 | 280 | 1.264 | 13x14 | 0.202 | 50 | 1.492 | 1034 | 17.9 | 1500 |
| TBA | 350 (37) | 0.661 | 1.267 | 280 | 1.367 | 18x14 | 0.146 | 50 | 1.595 | 1258 | 19.1 | 2100 |
| TBA | 500 (37) | 0.789 | 1.395 | 280 | 1.495 | 16x12 | 0.104 | 80 | 1.815 | 1681 | 21.8 | 3000 |
| TBA | 750 (61) | 0.968 | 1.583 | 280 | 1.713 | 24x12 | 0.069 | 80 | 2.033 | 2259 | 24.4 | 4500 |
| TBA | 1000 (61) | 1.117 | 1.732 | 280 | 1.862 | 20x10 | 0.052 | 80 | 2.226 | 2821 | 26.7 | 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

## 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 (1) | 0.211 | 0.265 | 0.068 | 0.052 | 0.238 | 1.152 | 0.580+j0.235 | 0.266+j0.051 | 2196.1 | 140 | 175 |
| 1 (19) | 0.211 | 0.265 | 0.064 | 0.050 | 0.253 | 1.226 | 0.579+j0.234 | 0.266+j0.050 | 2196.1 | 140 | 175 |
| 1/0 (1) | 0.168 | 0.211 | 0.064 | 0.050 | 0.254 | 1.232 | 0.525+j0.234 | 0.212+j0.050 | 2196.1 | 155 | 195 |
| 1/0 (19) | 0.168 | 0.211 | 0.061 | 0.049 | 0.266 | 1.292 | 0.525+j0.233 | 0.212+j0.049 | 2196.1 | 155 | 195 |
| 2/0 (19) | 0.133 | 0.167 | 0.057 | 0.047 | 0.286 | 1.386 | 0.458+j0.193 | 0.168+j0.047 | 2562.1 | 180 | 225 |
| 3/0 (19) | 0.105 | 0.132 | 0.053 | 0.045 | 0.307 | 1.490 | 0.382+j0.141 | 0.133+j0.045 | 3294.2 | 200 | 255 |
| 4/0 (19) | 0.0836 | 0.105 | 0.049 | 0.044 | 0.332 | 1.609 | 0.321+j0.109 | 0.107+j0.044 | 4026.2 | 235 | 285 |
| 250 (37) | 0.0707 | 0.089 | 0.045 | 0.042 | 0.362 | 1.756 | 0.278+j0.088 | 0.091+j0.042 | 4758.3 | | |
| 350 (37) | 0.0505 | 0.064 | 0.040 | 0.040 | 0.407 | 1.975 | 0.208+j0.059 | 0.066+j0.040 | 6588.4 | 310 | 375 |
| 500 (37) | 0.0354 | 0.045 | 0.035 | 0.040 | 0.463 | 2.245 | 0.151+j0.044 | 0.048+j0.039 | 9304.6 | 370 | 450 |
| 750 (61) | 0.0236 | 0.030 | 0.030 | 0.037 | 0.544 | 2.639 | 0.102+j0.031 | 0.035+j0.036 | 13956.9 | 460 | 545 |
| 1000 (61) | 0.0177 | 0.023 | 0.027 | 0.036 | 0.608 | 2.950 | 0.077+j0.028 | 0.029+j0.034 | 18488.1 | 520 | 620 |

* Calculations are based on three cables triplexed / concentric shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

† Ampacities are based on Figure 7 of ICEA T-117-734 (Single circuit trefoil, 100% load factor, 90°C conductor temperature, earth RHO 90, 36" burial depth)

‡ Ampacities are based on Figure 1 of ICEA T-117-734 (Single circuit trefoil, 100% load factor, 90°C conductor temperature, earth RHO 90, 36" burial depth)

## Table 3 – Weights and Measurements (Metric)

| Stock Number | 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 |
| TBA | 1 (1) | 7.34 | 22.50 | 7.11 | 24.54 | 6x14 | 1.44 | 1.27 | 30.33 | 863 | 363.22 | 2234 |
| TBA | 1 (19) | 8.18 | 23.34 | 7.11 | 25.37 | 6x14 | 1.44 | 1.27 | 31.17 | 909 | 373.38 | 2234 |
| TBA | 1/0 (1) | 8.25 | 23.42 | 7.11 | 25.45 | 6x14 | 1.44 | 1.27 | 31.24 | 924 | 375.92 | 2821 |
| TBA | 1/0 (19) | 8.94 | 24.10 | 7.11 | 26.14 | 6x14 | 1.44 | 1.27 | 31.93 | 963 | 383.54 | 2821 |
| TBA | 2/0 (19) | 10.03 | 25.20 | 7.11 | 27.23 | 7x14 | 1.23 | 1.27 | 33.02 | 1060 | 396.24 | 3556 |
| TBA | 3/0 (19) | 11.25 | 26.42 | 7.11 | 28.45 | 9x14 | 0.96 | 1.27 | 34.24 | 1186 | 411.48 | 4481 |
| 618979 | 4/0 (19) | 12.65 | 27.81 | 7.11 | 30.35 | 11x14 | 0.78 | 1.27 | 36.14 | 1366 | 434.34 | 5652 |
| TBA | 250 (37) | 14.17 | 29.57 | 7.11 | 32.11 | 13x14 | 0.66 | 1.27 | 37.90 | 1539 | 454.66 | 6675 |
| TBA | 350 (37) | 16.79 | 32.18 | 7.11 | 34.72 | 18x14 | 0.48 | 1.27 | 40.51 | 1872 | 485.14 | 9345 |
| TBA | 500 (37) | 20.04 | 35.43 | 7.11 | 37.97 | 16x12 | 0.34 | 2.03 | 46.10 | 2502 | 553.72 | 13350 |
| TBA | 750 (61) | 24.59 | 40.21 | 7.11 | 43.51 | 24x12 | 0.23 | 2.03 | 51.64 | 3362 | 619.76 | 20025 |
| TBA | 1000 (61) | 28.37 | 43.99 | 7.11 | 47.29 | 20x10 | 0.17 | 2.03 | 56.54 | 4198 | 678.18 | 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

## 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 (1) | 0.6923 | 0.87 | 0.0207 | 0.1706 | 0.781 | 3.7795 | 0.580+j0.235 | 0.266+j0.051 | 2196.1 | 140 | 175 |
| 1 (19) | 0.6923 | 0.87 | 0.0195 | 0.1640 | 0.830 | 4.0223 | 0.579+j0.234 | 0.266+j0.050 | 2196.1 | 140 | 175 |
| 1/0 (1) | 0.5512 | 0.69 | 0.0195 | 0.1640 | 0.833 | 4.0420 | 0.525+j0.234 | 0.212+j0.050 | 2196.1 | 155 | 195 |
| 1/0 (19) | 0.5512 | 0.69 | 0.0186 | 0.1608 | 0.873 | 4.2388 | 0.525+j0.233 | 0.212+j0.049 | 2196.1 | 155 | 195 |
| 2/0 (19) | 0.4364 | 0.55 | 0.0174 | 0.1542 | 0.938 | 4.5472 | 0.458+j0.193 | 0.168+j0.047 | 2562.1 | 180 | 225 |
| 3/0 (19) | 0.3445 | 0.43 | 0.0162 | 0.1476 | 1.007 | 4.8885 | 0.382+j0.141 | 0.133+j0.045 | 3294.2 | 200 | 255 |
| 4/0 (19) | 0.2743 | 0.34 | 0.0149 | 0.1444 | 1.089 | 5.2789 | 0.321+j0.109 | 0.107+j0.044 | 4026.2 | 235 | 285 |
| 250 (37) | 0.2320 | 0.29 | 0.0137 | 0.1378 | 1.188 | 5.7612 | 0.278+j0.088 | 0.091+j0.042 | 4758.3 | | |
| 350 (37) | 0.1657 | 0.21 | 0.0122 | 0.1312 | 1.335 | 6.4797 | 0.208+j0.059 | 0.066+j0.040 | 6588.4 | 310 | 375 |
| 500 (37) | 0.1161 | 0.15 | 0.0107 | 0.1312 | 1.519 | 7.3655 | 0.151+j0.044 | 0.048+j0.039 | 9304.6 | 370 | 450 |
| 750 (61) | 0.0774 | 0.10 | 0.0091 | 0.1214 | 1.785 | 8.6581 | 0.102+j0.031 | 0.035+j0.036 | 13956.9 | 460 | 545 |
| 1000 (61) | 0.0581 | 0.08 | 0.0082 | 0.1181 | 1.995 | 9.6785 | 0.077+j0.028 | 0.029+j0.034 | 18488.1 | 520 | 620 |

* Calculations are based on three cables triplexed / concentric shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

† Ampacities are based on Figure 7 of ICEA T-117-734 (Single circuit trefoil, 100% load factor, 90°C conductor temperature, earth RHO 90, 36" burial depth)

‡ Ampacities are based on Figure 1 of ICEA T-117-734 (Single circuit trefoil, 100% load factor, 90°C conductor temperature, earth RHO 90, 36" burial depth)