



CSA TRAY RATED

HVTC SPECIFICATIONS

HVTC AL 3/C 220EPR TS PVC 15KV 133% CSA



Southwire®
C A N A D A

PRODUCT HIGHLIGHTS

Southwire's 15KV HVTC is a CSA approved copper tape shielded cable for Industrial and Commercial medium voltage applications. FT4, -40°C, and 105°C rated for use in harsh Canadian environments. Rated for installation in cable trays, duct banks, direct burial, troughs, continuous rigid cable supports and concrete encaseable. For use in cable trays, exposed run and hazardous locations as per the limitations in the Canadian Electrical Code Part I, particularly Table 19.

CONSTRUCTION

Conductor

- Class B - compact stranded -8000 Series Aluminum -ACM

Options

- Class B compact stranded copper
- Class B compressed stranded copper
- Strand blocking technology
- Tinning on copper conductors

Conductor Shield

- Extruded semi-conducting thermosetting polymeric layer

Insulation

- No-lead EPR (Ethylene Propylene Rubber)
- Thickness: 0.22 inches (5.59mm) - nominal
- Insulation level: 133%
- 105°C rated

Insulation Shield

- Extruded Semi-conducting thermosetting polymeric layer
- CSA 68.10 - Shield Removal/termination requirements are printed on the surface
- Phase identification as per ICEA Method 3, using printed circuit numbers
- Meets requirement of ICEA but built to CSA standards

Copper Tape Shield

- Helically wrapped 5 mil copper tape with 25% overlap

Bonding Conductor

- Class B compressed stranded bare copper
- in accordance with ASTM B3 and B8

Fillers

- Non-wicking, non-hygroscopic

Overall Jacket

- Red PVC (optional colours available)
- Nominal Thickness:
No.2 AWG to 250 kcmil = 0.11 inches (2.79mm)
350 kcmil to 750 kcmil = 0.14 inches (3.56mm)

Typical Print Legend

- (CSA) SOUTHWIRE (NESC) #P# 3/C [#AWG or #kcmil] CPT AL 220 EPR 15KV 133% INS LEVEL 25% TS SUN RES TC-ER 105° FT4 (-40°C) LTGG RoHS YEAR [SEQUENTIAL METER MARKS]

TABLE 1 - WEIGHTS & MEASUREMENTS

| HVTC Product Code | Conductor Size * | Conductor Diameter | | Diameter Over Insulation | | Diameter Over Insulation Shield | | Bonding Cond. Size | Approx. Overall Diameter | | Minimum Bend Radius | | Approx. Weight of Cable | | Max. Reel Weight (reel and cable) ** | | Max. Reel Diameter / Width ** | | Max. Length of Cable on Reel ** | |
|-------------------|------------------|--------------------|------|--------------------------|------|---------------------------------|------|--------------------|--------------------------|------|---------------------|-----|-------------------------|-------|--------------------------------------|------|-------------------------------|-----------|---------------------------------|------|
| | AWG or Kcmil | inches | mm | inches | mm | inches | mm | AWG | inches | mm | inches | mm | lb / 1000ft | kg/km | lbs | kg | inches | m | feet | m |
| AL220Q50-002 | 2(7) | 0.268 | 6.8 | 0.738 | 18.7 | 0.818 | 20.8 | 8 | 2.030 | 51.6 | 14.2 | 361 | 1714 | 2551 | 10125 | 4593 | 108/70.5 | 2.74/1.79 | 5000 | 1524 |
| AL220Q50-001 | 1(19) | 0.299 | 7.6 | 0.769 | 19.5 | 0.849 | 21.6 | 6 | 2.097 | 53.3 | 14.7 | 373 | 1868 | 2780 | 10241 | 4645 | 108/70.5 | 2.74/1.79 | 4650 | 1417 |
| AL220Q50-010 | 1/0(19) | 0.336 | 8.5 | 0.806 | 20.5 | 0.886 | 22.5 | 6 | 2.177 | 55.3 | 15.2 | 387 | 2020 | 3006 | 10646 | 4829 | 108/70.5 | 2.74/1.79 | 4500 | 1372 |
| AL220Q50-020 | 2/0(19) | 0.376 | 9.6 | 0.846 | 21.5 | 0.926 | 23.5 | 6 | 2.263 | 57.5 | 15.8 | 402 | 2197 | 3269 | 11111 | 5040 | 108/70.5 | 2.74/1.79 | 4350 | 1326 |
| AL220Q50-030 | 3/0(19) | 0.423 | 10.7 | 0.893 | 22.7 | 0.973 | 24.7 | 6 | 2.365 | 60.1 | 16.6 | 420 | 2411 | 3589 | 10477 | 4753 | 108/70.5 | 2.74/1.79 | 3700 | 1128 |
| AL220Q50-040 | 4/0(19) | 0.475 | 12.1 | 0.945 | 24.0 | 1.025 | 26.0 | 6 | 2.477 | 62.9 | 17.3 | 440 | 2666 | 3968 | 11021 | 4999 | 108/70.5 | 2.74/1.79 | 3550 | 1082 |
| AL220Q50-250 | 250(37) | 0.520 | 13.2 | 1.000 | 25.4 | 1.080 | 27.4 | 4 | 2.596 | 65.9 | 18.2 | 462 | 2975 | 4427 | 10331 | 4686 | 108/70.5 | 2.74/1.79 | 2950 | 899 |
| AL220Q50-350 | 350(37) | 0.616 | 15.6 | 1.096 | 27.8 | 1.176 | 29.9 | 4 | 2.863 | 72.7 | 20.0 | 509 | 3666 | 5456 | 9987 | 4530 | 108/70.5 | 2.74/1.79 | 2300 | 701 |
| AL220Q50-500 | 500(37) | 0.736 | 18.7 | 1.216 | 30.9 | 1.296 | 32.9 | 3 | 3.123 | 79.3 | 21.9 | 555 | 4457 | 6633 | 9132 | 4142 | 108/70.5 | 2.74/1.79 | 1700 | 518 |
| AL220Q50-750 | 750(61) | 0.908 | 23.1 | 1.398 | 35.5 | 1.478 | 37.5 | 2 | 3.516 | 89.3 | 24.6 | 625 | 5751 | 8559 | 10182 | 4619 | 108/70.5 | 2.74/1.79 | 1500 | 457 |

NOTE: These are minimum average dimensions as per CSA Standards.

* Other conductor sizes and outer jacket colours are available upon request. (#s in brackets represent # of strands / conductor)

** Longer maximum lengths may be possible. Standard sizes and lengths may be supplied. Reel sizes are not guaranteed. The factory reserves the right to make changes as necessary to optimize manufacturing requirements.





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DESIGN

Qualification Standards

- CSA C68.10 - Shielded Power Cables for Commercial and Industrial Applications - 5 to 46 kV
- CSA C68.3 - Shielded & Concentric Neutral Power Cable - 5 to 46 kV
- CSA C22.2 No. 230 - Tray Cables
- ICEA S-93-639 (NEMA WC 74) 5 to 46 kV - Shielded Power Cable
- AEIC CS-8 - Qualification Testing Requirements

Flame Test Ratings

- FT1 - Flame Test - (1,706 BTU/Hr. nominal - Vertical Wire Flame Test)
- FT4, Flame Test - (70,000 BTU/Hr. - Vertical Tray Flame Test)
- IEEE 1202 - Flame Test - (70,000 BTU/Hr. - Vertical Tray Test)
- IEEE 383 - Flame Test - (70,000 BTU/Hr.)
- ICEA T-29-520 - Vertical Cable Tray Flame Test - (210,000 BTU/Hr)

Product Ratings

- CSA C22.2 No. 2556 & No. 0.3 - Wire and Cable Test Methods
- CSA LTGG [-40°C] - as per C68.10 - for Cold Bend and Impact rating
- CSA FT4 - for Flame Retardancy rating
- CSA SUN RES - for Sunlight Resistant rating
- CSA TC-ER ***

Operating Temperatures

- -40°C - CSA Cold Bend and Impact Temperature
- -25°C - Min. Installation Temperature
- 105°C - Max Continuous Operating Temperature
- 140°C for Emergency Overload Temperature
- 250°C for Short Circuit Temperature

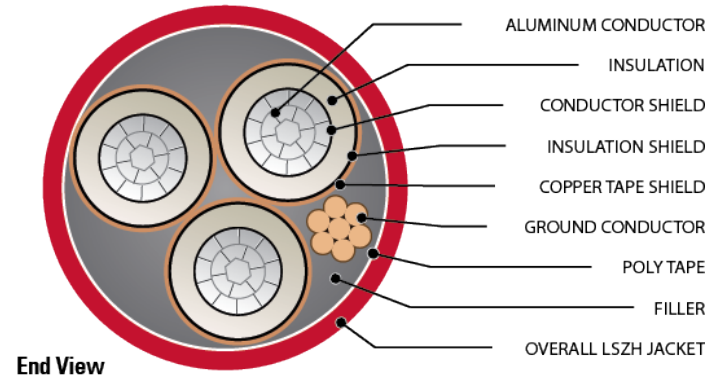


TABLE 2 - ENGINEERING SPECIFICATIONS

| HVTC Product Code | Maximum Pulling Tension | | DC Resistance @ 25°C R _{DC} | | AC Resistance @ 90°C 60 Hz (triplex formation) R _{AC} | | Inductance L | | Capacitance C | | Inductive Reactance @ 60Hz (triplexed) X _L | | Capacitive Reactance @ 60Hz (triplexed) X _C | | Positive - Sequence Impedance* | Zero - Sequence Impedance* | Short Circuit Current (each phase conductor) @ 60Hz | Allowable Ampacities in Ventilated Cable Tray † | Allowable Ampacities Directly Buried in Earth ‡ |
|-------------------|-------------------------|---------|--------------------------------------|--------|--|--------|---------------|---------|---------------|---------|---|--------|--|---------|--------------------------------|----------------------------|---|---|---|
| | lb | Newtons | Ω / 1000 ft. | Ω / km | Ω / 1000 ft. | Ω / km | mH / 1000 ft. | mH / km | μF / 1000 ft. | μF / km | Ω / 1000 ft. | Ω / km | MΩ · 1000ft | MΩ · km | | | | | |
| AL220Q50-002 | 1194 | 5313 | 0.265 | 0.869 | 0.333 | 1.093 | 0.1193 | 0.3915 | 0.0485 | 0.1592 | 0.0450 | 0.1476 | 0.0547 | 0.0167 | 0.333 + j0.048 | 0.708 + j0.421 | 2.9 | 135 | 157 |
| AL220Q50-001 | 1506 | 6701 | 0.211 | 0.692 | 0.265 | 0.870 | 0.1152 | 0.3779 | 0.0520 | 0.1707 | 0.0434 | 0.1424 | 0.0510 | 0.0155 | 0.266 + j0.046 | 0.639 + j0.406 | 3.7 | 154 | 178 |
| AL220Q50-010 | 1901 | 8455 | 0.168 | 0.551 | 0.211 | 0.693 | 0.1109 | 0.3639 | 0.0562 | 0.1843 | 0.0418 | 0.1372 | 0.0472 | 0.0144 | 0.212 + j0.044 | 0.584 + j0.390 | 4.7 | 176 | 202 |
| AL220Q50-020 | 2396 | 10657 | 0.133 | 0.436 | 0.167 | 0.549 | 0.1070 | 0.3511 | 0.0606 | 0.1988 | 0.0403 | 0.1324 | 0.0438 | 0.0133 | 0.168 + j0.043 | 0.537 + j0.373 | 5.9 | 204 | 229 |
| AL220Q50-030 | 3020 | 13435 | 0.105 | 0.345 | 0.132 | 0.433 | 0.1031 | 0.3384 | 0.0658 | 0.2158 | 0.0389 | 0.1276 | 0.0403 | 0.0123 | 0.132 + j0.041 | 0.499 + j0.354 | 7.4 | 234 | 260 |
| AL220Q50-040 | 3809 | 16942 | 0.084 | 0.274 | 0.105 | 0.345 | 0.0995 | 0.3265 | 0.0714 | 0.2344 | 0.0375 | 0.1231 | 0.0371 | 0.0113 | 0.106 + j0.040 | 0.469 + j0.336 | 9.4 | 268 | 294 |
| AL220Q50-250 | 4500 | 20017 | 0.071 | 0.232 | 0.089 | 0.292 | 0.0974 | 0.3197 | 0.0752 | 0.2466 | 0.0367 | 0.1205 | 0.0353 | 0.0108 | 0.089 + j0.039 | 0.448 + j0.317 | 11.1 | 296 | 323 |
| AL220Q50-350 | 6300 | 28024 | 0.051 | 0.166 | 0.064 | 0.209 | 0.0927 | 0.3041 | 0.0853 | 0.2799 | 0.0349 | 0.1147 | 0.0311 | 0.0095 | 0.064 + j0.037 | 0.414 + j0.288 | 15.5 | 363 | 386 |
| AL220Q50-500 | 9000 | 40034 | 0.035 | 0.116 | 0.045 | 0.147 | 0.0882 | 0.2893 | 0.0979 | 0.3212 | 0.0332 | 0.1091 | 0.0271 | 0.0083 | 0.045 + j0.035 | 0.383 + j0.257 | 22.2 | 447 | 465 |
| AL220Q50-750 | 13500 | 60051 | 0.024 | 0.077 | 0.030 | 0.100 | 0.0839 | 0.2752 | 0.1139 | 0.3736 | 0.0316 | 0.1038 | 0.0233 | 0.0071 | 0.031 + j0.033 | 0.350 + j0.218 | 33.2 | 566 | 563 |

* Calculations are based on 5 mil 25 % over lapping copper tape shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohms-meter

† Ampacities are based on Table D17N of the 2015 Canadian Electrical Code Part I (40°C Ambient Air Temperature, indoor installation)

‡ Ampacities are based on Table D17E of the 2015 Canadian Electrical Code Part I

*** For use in cable trays, exposed run and hazardous locations as per the limitations in the Canadian Electrical Code Part I, particularly Table 19.

