# Southwire® Machine Flex® TCU 600/1000V XLPE Insulation Shielded TPE Jacket. RHH/RHW-2 Flexible Variable Frequency Drive (VFD)

Southwire® Machine Flex® Type TC-ER Variable Frequency Drive Cable, 600 Volts or 1000 Volts, Tinned Copper Conductors, Cross-Linked Insulation Type RHH/RHW-2, Thermoplastic Elastomer Jacket, Rated 90°C Dry or Wet, -40°C Cold Impact, Identification Method 4. 1000 Volts Flexible Motor Supply. CSA CIC/TC FT4 Flame. Sunlight Resistance, Direct Burial, Silicone Free.




Image not to scale. See Table 1 for dimensions.

## CONSTRUCTION:

1. **Conductor:** Class K flexible stranded tinned annealed copper per ASTM B33, B172, and B174
2. **Insulation:** Cross-linked insulation (Type RHH/RHW-2 on 14 AWG and larger)
3. **Ground:** One green ground with yellow stripe cross linked insulation (size equal to phase conductor)
4. **Drain Wire:** Tinned copper drain wire
5. **Shielding:** 100% coverage aluminum/Mylar/aluminum foil, overall 85% coverage tinned copper braid
6. **Jacket:** Black Thermoplastic Elastomer (TPE) jacket

## APPLICATIONS AND FEATURES:

Power supply cable for VFDs and motors, suitable for cable tray, conduit, raceways, (TC-ER) and machine tool wiring conforming to NFPA 79. Suitable for free air and direct burial. Its flexible design is ideal for use on operation processes in accordance with NEC® Articles 336, 501 and 502 including, but not limited to: fans, pumps, conveyors, compressors, elevators and lifts, extruders, crushers and presses, assembly lines, food and beverage, wind energy and data centers. Cable is rated for -40C Cold Bend and Impact. Multiple approvals for multiple applications.

## SPECIFICATIONS:

- ASTM B33 Standard Specification for Tin-Coated Soft or Annealed Copper Wire
- ASTM B172 Standard Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Copper Conductors
- ASTM B174 Standard Specification for Bunch-Stranded Copper
- UL 44 Thermoset-Insulated Wires and Cables
- UL 758 Standard for Appliance Wiring Material Style 20886
- UL 1277 Type TC-ER Standard Power and Control Cables (1000V 14AWG and Larger)
- UL 2277 Flexible Motor Supply & Type WTTC
- CSA C22.2 No. 210 Appliance wiring material products I/II A/B
- CSA C22.2 No.230 Tray Cables - Rated TC
- CSA C22.2 No. 239 Control and instrumentation cables
- ICEA S-58-679 Control Cable Conductor Identification Method 4
- ICEA S-95-658 (NEMA WC70) Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy


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- IEEE 1202 FT4 Flame Test (70,000) BTU/hr Vertical Tray Test
- Exceeds Ecolab PM-40-1 Material Resistance Test With 30-day Exposure, UL Verified V747862
- **CE/RoHS-2 – The CE Marking has been applied solely to express the conformance to the material restrictions identified in the RoHS-2 (2011/65/EU) Directive**
- Made in America: Compliant with both Buy American and Buy America Act (BAA) requirements per 49 U.S.C. § 5323(j) and the Federal Transit Administration Buy America requirements per 49 C.F.R. part 661

## SAMPLE PRINT LEGEND:

Southwire XXAWG (XXmm2) XX/C VFD RHH/RHW-2 CDRS TYPE TC-ER E75755 (UL) 600V 90°C DRY 90°C WET SUN RES OIL RES I/II DIR BUR -40°C OR WTTC 1000V OR AWM 20886 105°C 1000V OR FLEXIBLE MOTOR SUPPLY CABLE 1000V OR SUBMERSIBLE PUMP CABLE 600V -- LL90458 CSA CIC/TC FT4 OR AWM I/II A/B 1000V 105C FT4 -40°C -- CE RoHS-2 Made in USA

## Table 1 – Weights and Measurements

| Stock Number | Cond. Size | Cond. Number | Strand Count | Diameter Over Conductor | Insul. Thickness | Ground | Drain Wire | Dia. Over Shield | Jacket Thickness | Approx. OD | Copper Weight | Approx. Weight | Jacket Color |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AWG/ Kcmil | | No. of Strands | inch | mil | No. x AWG | No. x AWG | inch | mil | inch | lb/1000ft | lb/1000ft | |
| 585342◊ | 16 | 3 | 26 | 0.059 | 45 | 1 x 16 | 1x16 | 0.399 | 60 | 0.523 | 64 | 154 | BK |
| 585343◊ | 14 | 3 | 41 | 0.073 | 45 | 1 x 14 | 1x14 | 0.441 | 60 | 0.563 | 90 | 195 | BK |
| 585344◊ | 12 | 3 | 65 | 0.094 | 45 | 1 x 12 | 1x12 | 0.511 | 60 | 0.635 | 131 | 254 | BK |
| 585416◊ | 10 | 3 | 105 | 0.117 | 45 | 1 x 10 | 1x10 | 0.574 | 60 | 0.698 | 196 | 339 | BK |
| 643451◊ | 8 | 3 | 168 | 0.153 | 60 | 1 x 8 | 4x14 | 0.71 | 80 | 0.927 | 299 | 580 | BK |
| 643459◊ | 6 | 3 | 266 | 0.198 | 60 | 1 x 6 | 4x12 | 0.782 | 80 | 0.99 | 477 | 790 | BK |
| 643467◊ | 4 | 3 | 420 | 0.235 | 60 | 1 x 4 | 4x10 | 0.911 | 80 | 1.094 | 727 | 1072 | BK |
| 643474◊ | 2 | 3 | 651 | 0.302 | 60 | 1 x 2 | 4x8 | 1.07 | 80 | 1.274 | 1138 | 1544 | BK |

All dimensions are nominal and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* Ampacities based upon 2023 NEC Table 310.16. See NEC sections 310.15 and 110.14(C) for additional requirements.
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.

## Table 2 – Electrical and Engineering Data

| Stock Number | Cond. Size | Cond. Number | Min Bending Radius | Max Pull Tension | DC Resistance @ 25°C | AC Resistance @ 75°C | Inductive Reactance @ 60Hz | Allowable Ampacity At 75°C | Allowable Ampacity At 90°C |
|---|---|---|---|---|---|---|---|---|---|
| | AWG/ Kcmil | | inch | lb | Ω/1000ft | Ω/1000ft | Ω/1000ft | Amp | Amp |
| 585342◊ | 16 | 3 | 3.7 | 61 | 4.487 | 5.406 | 0.033 | - | 18 |
| 585343◊ | 14 | 3 | 3.9 | 98 | 2.814 | 3.391 | 0.058 | 20 | 25 |
| 585344◊ | 12 | 3 | 4.4 | 156 | 1.774 | 2.137 | 0.054 | 25 | 30 |
| 585416◊ | 10 | 3 | 4.9 | 249 | 1.111 | 1.339 | 0.05 | 35 | 40 |
| 643451◊ | 8 | 3 | 6.5 | 396 | 0.715 | 0.861 | 0.052 | 50 | 55 |
| 643459◊ | 6 | 3 | 6.9 | 629 | 0.45 | 0.541 | 0.051 | 65 | 75 |
| 643467◊ | 4 | 3 | 7.7 | 1001 | 0.282 | 0.34 | 0.048 | 85 | 95 |
| 643474◊ | 2 | 3 | 8.9 | 1592 | 0.179 | 0.216 | 0.045 | 115 | 130 |

VFD Sizing Calculator



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