Southwire® Machine Flex® CU 600/1000V PVC-Nylon Insulation TPE Gray Jacket. THHN

Type TC-ER Machine Tray Control Cable 600/1000 Volt Copper Conductors, Polyvinyl Chloride (PVC) with nylon layer Insulation Thermoplastic Elastomer Jacket, 90°C Dry 75°C Wet -40°C Cold Impact Identification Method 4



Image not to scale. See Table 1 for dimensions.

CONSTRUCTION:

1. **Conductor:** Class K, Flexible stranded bare annealed copper per ASTM B3, B172, and B174
2. **Insulation:** Polyvinyl Chloride (PVC) with nylon layer THHN
3. **Ground:** One Green Ground with Yellow Stripe THHN
4. **Jacket:** Sunlight Resistant Gray Thermoplastic Elastomer TPE: Other jacket colors available upon request

APPLICATIONS AND FEATURES:

Southwire's Machine Flex® control tray cables 600/1000 Volt conform to NFPA 79 and are suited for use in wet and dry areas, conduits, ducts, troughs, trays, direct burial and where superior electrical properties are desired. These cables are capable of operating continuously at the conductor temperature not in excess of 75°C in wet locations and 90°C in dry locations, 130°C for emergency overload, and 150°C for short circuit conditions. For uses in Class I, II, Division 2 hazardous locations per NEC® Article 501 and 502. Constructions with 3 or more conductors are listed for exposed runs (TC-ER) per NEC® 336.10. Southwire's machine tray cable is ideal for use in CNC machines, grinding, cutting, metal forming, buffing, bottling equipment, conveyors, processing & packaging equipment, assembly lines, control panels, food and beverage, oil sands, plant expansion, wind energy and data centers. Multiple approvals for multiple applications. Cable is rated for -40°C cold impact. Two conductor cables contain no green/yellow ground.

SPECIFICATIONS:

- ASTM B172 Standard Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Copper Conductors
- ASTM B174 Standard Specification for Bunch-Stranded Copper
- UL 66 Fixture Wire Type TFFN (for sizes 18 and 16 AWG)
- UL 83 Thermoplastic Insulated Wire and Cables (sizes 14 AWG to 1000 kcmil)
- UL 758 AWM Style 2587
- UL 1063 Machine Tool Wiring (MTW)
- UL 1277 TC-ER
- UL 1690 Data Processing Cable (DP-1)
- UL 2277 Type WTTC
- UL 13 Type PLTC-ER sizes 18-12AWG
- UL 2250 Type ITC-ER on sizes 18-12 AWG
- CSA C22.2 No. 210 Appliance wiring material products I/II A/B (Sizes 16 - 8AWG)
- CSA C22.2 No.230 Tray Cables - Rated TC
- CSA C22.2 No. 239 Control and instrumentation cables

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- ICEA S-95-658 (NEMA WC70) Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy
- IEEE 1202 FT4 Flame Test (70,000) BTU/hr Vertical Tray Test
- 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
- NFPA 79 Electrical Standard for Industrial Machinery
- 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:

Print Legend 1:
Southwire XXAWG (XXmm2) XX/C PVC/Nylon Type TC-ER EXXXXX (UL) 600V 90°C Dry 75C Wet Sun Res Oil Res I/II DIR BUR - 40°C OR MTW Flexing OR DP-1 OR WTTC 1000V OR AWM 2587 -- LLXXXXXX CSA AWM I/II A/B 105°C 1000V -40°C FT4 -- CSA FT4 CE RoHS -2 Made in USA

Print Legend 2:
SOUTHWIRE® XX AWG (X.XXmm2) X/C PVC/NYLON TYPE TC-ER E75755 (UL) 600V 90°C DRY 75°C WET SUN RES OIL RES I/II DIR BUR -40°C OR MTW FLEXING OR DP-1 OR WTTC 1000V OR PLTC-ER OR ITC-ER OR AWM 2587 -- LL90458 CSA CIC/TC FT4 OR AWM I/II A/B 105°C 1000V -40°C FT4 -- NOM-ANCE 90°C PVC/NYLON PVC-TPE THHN/THWN FT4 600V -- {CE} RoHS-2 MADE IN USA

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Table 1 – Physical and Electrical Data

Stock Number	Cond. Size	Cond. Number	Cond. Strands	Diameter Over Cond.	Insul. Thickness	Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight	AC Resistance @ 75°C	Inductive Rectance	Min Bending Radius	Allowable Ampacity 75°C	Allowable Ampacity 90°C
	AWG	No.	strands	inch	mil	mil	inch	lb / 1000ft	lb / 1000ft	Ω /1000ft	Ω/1000ft	inch	Amp	Amp
18 AWG														
677071	18	2	16	0.044	20	45	0.266	10	35	8.613	0.036	1.0	-	14
581511◊	18	3	16	0.044	20	45	0.281	15	42	8.613	0.036	1.1	-	14
582642◊	18	4	16	0.044	20	45	0.306	20	54	8.613	0.036	1.2	-	11
582644◊	18	5	16	0.044	20	45	0.332	25	63	8.613	0.036	1.3	-	11
139265	18	6	16	0.044	20	45	0.348	31	84	8.613	0.036	1.4	-	11
581513^◊	18	7	16	0.044	20	45	0.358	35	79	8.613	0.036	1.4	-	9
582645◊	18	9	16	0.044	20	45	0.411	45	101	8.613	0.036	1.6	-	9
582646◊	18	12	16	0.044	20	45	0.456	60	128	8.613	0.036	1.8	-	7
582647◊	18	18	16	0.044	20	45	0.554	90	225	8.613	0.036	2.2	-	7
646262◊	18	19	16	0.044	20	45	0.560	95	200	8.613	0.036	2.2	-	7
581514◊	18	25	16	0.044	20	60	0.635	125	253	8.613	0.036	2.5	-	6
16 AWG														
677072◊	16	2	26	0.059	20	50	0.294	16	45	5.406	0.033	1.1	-	18
581515◊	16	3	26	0.059	20	50	0.311	24	58	5.406	0.033	1.2	-	18
582648◊	16	4	26	0.059	20	50	0.339	32	71	5.406	0.033	1.3	-	14
582649◊	16	5	26	0.059	20	50	0.370	40	86	5.406	0.033	1.4	-	14
139203	16	6	26	0.059	20	50	0.400	47	116	5.406	0.033	1.6	-	14
581516◊	16	7	26	0.059	20	50	0.400	56	107	5.406	0.033	1.6	-	12
139204	16	8	26	0.059	20	50	0.431	72	142	5.406	0.033	1.7	-	12
582651◊	16	9	26	0.059	20	50	0.462	72	137	5.406	0.033	1.8	-	12
139205	16	10	26	0.059	20	50	0.500	81	186	5.406	0.033	2.0	-	9
582652◊	16	12	26	0.059	20	50	0.509	97	174	5.406	0.033	2.0	-	9
582653◊	16	18	26	0.059	20	65	0.623	145	262	5.406	0.033	2.4	-	9
646263◊	16	19	26	0.059	20	65	0.630	154	272	5.406	0.033	2.5	-	9
581517◊	16	25	26	0.059	20	65	0.717	202	345	5.406	0.033	2.8	-	8
581518◊	16	41	26	0.059	20	90	0.948	332	590	5.406	0.033	3.8	-	6
14 AWG														
677073	14	2	41	0.073	20	50	0.324	25	58	3.391	0.058	1.2	20	25
581519◊	14	3	41	0.073	20	50	0.342	38	77	3.391	0.058	1.3	20	25
582654◊	14	4	41	0.073	20	50	0.375	51	96	3.391	0.058	1.5	16	20
582655◊	14	5	41	0.073	20	50	0.411	63	114	3.391	0.058	1.6	16	20
581521◊	14	7	41	0.073	20	50	0.445	89	149	3.391	0.058	1.7	14	17
673795◊	14	8	41	0.073	20	50	0.495	102	175	3.391	0.058	1.9	14	17
582656◊	14	9	41	0.073	20	50	0.516	115	188	3.391	0.058	2.0	14	17
582657◊	14	12	41	0.073	20	65	0.608	153	257	3.391	0.058	2.4	10	12
582658◊	14	18	41	0.073	20	65	0.697	230	363	3.391	0.058	2.7	10	12
581522◊	14	25	41	0.073	20	65	0.806	318	486	3.391	0.058	3.2	9	11
12 AWG														
677074	12	2	65	0.094	20	50	0.362	40	80	2.137	0.054	1.4	25	30

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	AWG	No.	strands	inch	mil	mil	inch	lb / 1000ft	lb / 1000ft	Ω /1000ft	Ω/1000ft	inch	Amp	Amp
677188◊	12	3	65	0.094	20	50	0.389	60	108	2.137	0.054	1.5	25	30
582659◊	12	4	65	0.094	20	50	0.420	81	136	2.137	0.054	1.6	20	24
582660◊	12	5	65	0.094	20	50	0.502	101	170	2.137	0.054	2.0	20	24
139262	12	6	65	0.094	20	50	0.502	122	194	2.137	0.054	2.0	20	24
582661	12	7	65	0.094	20	50	0.502	141	219	2.137	0.054	2.0	17	21
139263	12	8	65	0.094	20	65	0.574	162	260	2.137	0.054	2.3	17	21
139264	12	9	65	0.094	20	65	0.615	182	291	2.137	0.054	2.5	17	21
10 AWG														
677075	10	2	105	0.117	25	50	0.430	64	119	1.339	0.050	1.7	35	40
677189◊	10	3	105	0.117	25	50	0.462	97	159	1.339	0.050	1.8	35	40
581523◊	10	4	105	0.117	25	50	0.502	129	201	1.339	0.050	2.0	28	32
582662	10	5	105	0.117	25	50	0.579	161	291	1.339	0.050	2.3	28	32
582663	10	7	105	0.117	25	65	0.628	226	336	1.339	0.050	2.5	24	28
8 AWG														
677190◊	8	3	168	0.153	35	65	0.626	157	314	0.861	0.052	2.5	50	55
643367◊	8	4	168	0.153	35	65	0.680	210	361	0.861	0.052	2.7	40	44
673797	8	5	168	0.153	35	70	0.766	263	450	0.861	0.052	3.0	40	44
6 AWG														
677191	6	3	259	0.198	35	70	0.725	268	440	0.541	0.051	2.9	65	75
643369◊	6	4	259	0.198	35	70	0.817	358	562	0.541	0.051	3.2	52	60
4 AWG														
677192	4	3	420	0.235	50	80	0.889	399	649	0.340	0.048	3.5	85	95
643371◊	4	4	420	0.235	50	80	0.969	532	829	0.340	0.048	3.8	68	76
2 AWG														
677193	2	3	651	0.302	50	100	1.070	637	988	0.216	0.045	5.3	115	130
643373◊	2	4	651	0.302	50	100	1.196	849	1262	0.216	0.045	5.9	92	104

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 and do not take into account the overcurrent protection limitations in NEC 240.4(D) of 15 Amps for 14 AWG CU, 20 Amps for 12 AWG CU, and 30 Amps for 10 AWG CU (independent of the conductor temperature rating and stranding if size is present in table). Also, see NEC sections 310.15 and 110.14(C) for additional requirements.

* Ampacities have been adjusted for more than Three Current-Carrying Conductors.

* Cond. Number includes the green ground except for 2/C stock numbers.

^ No Fillers