

# TYPE TC-ER - CONTROL OR INSTRUMENTATION CABLE

PVC/Nylon Insulation with Overall PVC Jacket  
18 - 10 AWG • 600 Volts • 90°C Dry and 75°C Wet



OSHA

## Scope

This specification covers the construction requirements for multi-conductor cables having TFFN or VW-1 THHN/THWN (PVC/Nylon) insulation with an overall gas/vapor tight and oil resistant Polyvinyl Chloride (PVC) jacket; Underwriters' Laboratories, Inc. listed as TC-ER per UL Standard 1277. These cables also conform to Article 392 "Cable Trays", and Article 336 "Power and Control Cable Type TC" of the 2008 National Electric Code. They meet the requirements of the ICEA T-30-520 flame test as well as the 70,000 BTU "Cable Propagation Test" per IEEE-383 and show reserve capabilities by also passing the ICEA T-29-520 210,000 BTU flame test. Rated 600 Volts, 90°C dry and 75°C wet. They also meet the CSA FT4 and the IEEE 1202 70,000 BTU flame tests.

## Applications

UL listed and OSHA acceptable. Recognized for use in Class 1 or 2, Division 2 hazardous locations and for installation in trays, wireways, troughs, channels, ducts and conduit. Specifically approved for direct burial, wet or dry locations and outdoors in cable trays where a sunlight resistant rating is required. Designed for control, power, lighting, telemetering, signals and relay or traffic control.

## Construction

**Conductors:** Bare, soft annealed copper per ASTM B-3.

**Sizes 18 and 16 AWG (TFFN):** Bunch stranded. Size 18 (16/.010") and Size 16 (26/.010") per UL-62 Table 11.1.

**Sizes 14, 12 and 10 AWG (THHN/THWN):** Concentric stranded, class B (7 strands) per ASTM B-8 and UL-83 Table 13.1.

**Insulation:** High dielectric strength polyvinyl chloride, UL-1581 table 50.145 (THWN 75°C), UL-1581 table 50.155 (THHN 90°C), UL-1581 table 50.155 Class 12B (TFFN 90°C). Thickness: UL-83 table 15.8 for THHN/THWN, UL-66 table 4.7 for TFFN.

**Conductor Jacket:** Nylon (UL-83 paragraph 14.1 for THHN/THWN, UL-62 paragraph 22.1 for TFFN). Thickness: UL-83 table 15.8 for THHN/THWN, UL-66 paragraph 9.1 for TFFN.

**Cabling:** Three or more conductors are assembled with fillers in the core as needed. A nylon rip cord is inserted under the jacket for ease of stripping. Two conductors are assembled flat parallel (round, with fillers as needed, is available upon request).

**Overall Jacket:** A black, gas/vapor tight, flame resistant, VW-1 rated Polyvinyl Chloride (PVC) jacket is applied over the assembly. The surface profile of the jacket shall approximate that of the underlying assembly. A high strength nylon rip cord shall be placed under the jacket to facilitate stripping of the jacket.

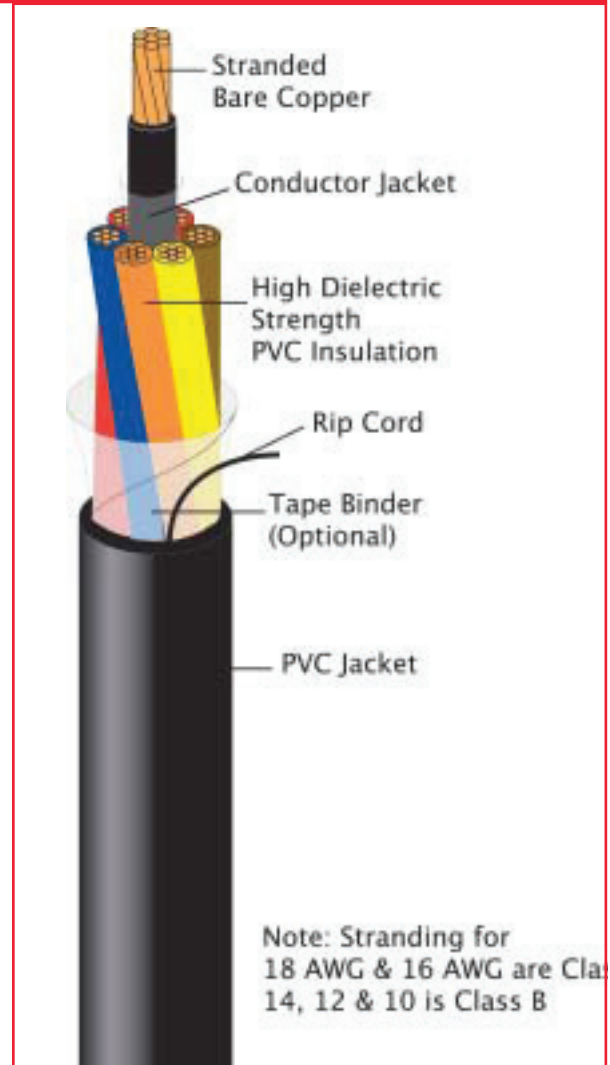
### Cable Identification:

Sizes 18 and 16 AWG (Ink print on jacket): "Size AWG/No. of CDRs. Type TC-ER TFFN CDRs. 90°C Dry, 75°C Wet, Sunlight Resistant, 600V, A.I.W. Corp. (UL) Direct Burial FT4/IEEE1202 (Sequential Footage)"

Sizes 14, 12 and 10 AWG (Ink print on jacket): "Size AWG/No. of CDRs. Type TC-ER THHN or THWN CDRs. 90°C Dry, 75°C Wet, Sunlight Resistant, 600V, A.I.W. Corp. (UL) Direct Burial FT4/IEEE1202 (Sequential Footage)"

**Color Code:** Colored insulation and stripes plus print on one side with a contrasting ink per Table VI.

**Construction Options:** Consult factory for specifications on cables with available shields. (See pages 12 and 13 for cable specifications with an aluminum/polyester tape shield.) Cables made in accordance with Dupont Spec. SE-33.4 B are also available.



The data listed above is approximate and subject to change without notice.

### Conductor Data

Size AWG	Strands No. / O.D. (Inches)	PVC		Nylon Armor (Inches)	Appr ox. O. D. (Inches)
		Insul. Thick. (Inches)			
18	16/.0100	.015		.004	.088
16	26/.0100	.015		.004	.091
14	7/.0242	.015		.004	.112
12	7/.0305	.015		.004	.130
10	7/.0385	.020		.004	.164

### Cable Data

	18 AWG • ES08136				16 AWG • ES17052				14 AWG • ES17053				12 AWG • ES17054				10 AWG • ES17055			
No. of Conds.	OA		Appr ox.		OA		Appr ox.		OA		Appr ox.		OA		Appr ox.		OA		Appr ox.	
	Part No.	Jkt. Thick. (MILS)	O.D. (IN)	Lbs./ M Ft.	Part No.	Jkt. Thick. (MILS)	O.D. (IN)	Lbs./ M Ft.	Part No.	Jkt. Thick. (MILS)	O.D. (IN)	Lbs./ M Ft.	Part No.	Jkt. Thick. (MILS)	O.D. (IN)	Lbs./ M Ft.	Part No.	Jkt. Thick. (MILS)	O.D. (IN)	Lbs./ M Ft.
2 Fl	-	45	.180x.268	41	68103	45	.195x.295	49	68115	45	.204x.316	64	68127	45	.222x.353	83	68141	45	.256x.421	115
2 Rd	-	45	.268	46	-	45	.295	54	-	45	.316	71	-	45	.353	92	-	45	.421	127
3	-	45	.281	50	68104	45	.310	66	68116	45	.334	87	68128	45	.393	113	68142	45	.446	167
4	-	45	.304	60	68105	45	.335	79	68117	45	.363	107	68130	45	.406	145	68144	45	.490	212
5	-	45	.330	71	68106	45	.365	94	68118	45	.395	129	68131	45	.444	175	68145	60	.566	269
6	-	45	.357	85	-	45	.395	109	-	45	.429	147	68132	45	.458	199	-	60	.616	317
7	-	45	.357	89	68107	45	.395	118	68119	45	.429	162	68133	45	.485	223	68146	60	.616	352
8	-	45	.384	99	-	45	.430	133	-	45	.463	184	-	60	.553	268	-	60	.666	399
9	-	45	.411	112	68108	45	.460	147	68120	45	.503	221	68134	60	.593	304	68147	60	.716	445
10	-	45	.432	121	-	45	.480	162	-	60	.577	237	-	60	.645	327	-	60	.781	490
11	-	45	.443	130	-	45	.490	176	-	60	.577	257	-	60	.645	357	-	60	.781	527
12	-	45	.454	156	68109	45	.505	202	68121	60	.594	281	68135	60	.670	388	68148	60	.812	579
13	-	45	.470	158	-	60	.550	217	-	60	.603	293	-	60	.680	413	-	80	.825	657
14	-	45	.486	160	-	60	.570	230	-	60	.622	316	-	60	.704	442	-	80	.893	706
15	-	45	.498	169	68110	60	.585	243	68122	60	.639	340	68136	60	.740	466	-	80	.935	750
16	-	45	.513	192	-	60	.600	258	-	60	.655	356	-	60	.740	500	-	80	.935	795
17	-	60	.557	203	-	60	.620	274	-	60	.690	375	-	60	.780	530	-	80	.990	844
18	-	60	.570	214	-	60	.635	284	-	60	.690	393	-	60	.780	558	-	80	.990	893
19	-	60	.570	220	68111	60	.635	296	68123	60	.690	408	68137	60	.780	581	-	80	.990	918
20	-	60	.585	228	-	60	.655	310	-	60	.709	424	-	60	.804	647	-	80	1.020	975
21	-	60	.596	239	-	60	.670	327	-	60	.723	450	-	80	.820	680	-	80	1.040	1011
22	-	60	.612	251	-	60	.685	340	-	60	.758	469	-	80	.820	711	-	80	1.040	1058
23	-	60	.623	259	-	60	.700	353	-	60	.758	488	-	80	.900	738	-	80	1.090	1104
24	-	60	.632	268	-	60	.710	367	-	60	.797	508	-	80	.950	768	-	80	1.155	1151
25	-	60	.640	279	68112	60	.720	379	68124	60	.802	526	68138	80	.950	796	-	80	1.155	1204
26	-	60	.650	287	-	60	.730	391	-	60	.802	582	-	80	.950	822	-	80	1.155	1238
27	-	60	.657	298	-	60	.740	405	-	60	.820	601	-	80	.970	850	-	80	1.180	1273
28	-	60	.668	306	-	60	.750	418	-	80	.868	621	-	80	.975	880	-	80	1.180	1317
29	-	60	.677	314	-	60	.760	431	-	80	.868	640	-	80	.980	907	-	80	1.194	1360
30	-	60	.692	325	68113	60	.780	456	68125	80	.888	666	68139	80	1.003	938	-	80	1.223	1404
31	-	60	.696	333	-	60	.785	458	-	80	.904	679	-	80	1.023	964	-	80	1.223	1450
32	-	60	.705	343	-	60	.795	507	-	80	.904	698	-	80	1.023	992	-	80	1.246	1495
33	-	60	.720	353	-	60	.810	522	-	80	.920	718	-	80	1.041	1022	-	80	1.270	1540
34	-	60	.725	361	-	60	.815	536	-	80	.938	737	-	80	1.062	1050	-	80	1.270	1585
35	-	60	.733	371	-	80	.865	549	-	80	.938	756	-	80	1.062	1077	-	80	1.296	1625
36	-	60	.745	381	-	80	.880	564	-	80	.955	780	-	80	1.080	1106	-	80	1.320	1675
37	-	60	.745	390	68114	80	.880	580	68126	80	.955	794	68140	80	1.080	1134	-	80	1.320	1700

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