

SPECIFICATION**For****FD-0.6/1KV-CVV**

0.6/1(1.2)kV

PVC Insulated PVC Sheathed

Flame Retardant Control Cable

(0.6/1(1.2)kV, Cu/PVC/FR-PVC)

BY



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CUSTOMER

Rev.	Date	Description
0	26/5/2020	Issued specification
1	7/6/2022	- Correct the value in Table 1 - Cancel cable code "0010"

Customer Document	Rev.

Remark:

This document is based on the Customer Document for the structure and properties of electric wire and cable only. If there are different points, will be shown in deviation table.

1. Scope

This specification covers 1000V copper conductor polyvinyl chloride (PVC) insulated polyvinyl chloride (PVC) sheathed flame retardant control cable.

The cable shall be in accordance with IEC 60502-1 : 2004 and Amend.1 : 2009.

The finished cables shall meet the vertical tray flame test requirements per IEC 60332-1 and IEC 60332-3-24; Category C.

2. Conductor

The conductor shall be flexible stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 5.

For size 1.5 to 4 mm² : The direction of lay shall be left-hand (S) lay.

For size 6 and 10 mm² : The direction of lay shall be right-hand (Z) lay.

3. Insulation

The insulation shall be polyvinyl chloride (PVC/A) compound meet the requirements of IEC 60502-1 : 2004.

The average thickness of the insulation shall be not less than that given in Table 1.

The minimum thickness shall not fall below the value in Table 1 by more than 10 % plus 0.1 mm.

4. Cabling

The individual insulated cores shall be cabled together with suitable non-hygroscopic filler to give the completed cable a substantially circular cross section.

The direction of lay shall be left-hand (S) lay in the outer layer.

A suitable binder tape shall be applied helically over the cabled core.

5. Core Identification

The cores shall be identified by color or numerals printed on the insulation, as follows :

2-cores : blue, brown

3-cores : brown, black, grey

4-cores : blue, brown, black, grey

For 5-cores to 30-cores :

The cores shall be identified by the arabic numerals printed longitudinally and continuously on the surface of black insulation.

6. Sheath

The sheath shall be sunlight resistant and flame retardant polyvinyl chloride (PVC/ST1) compound meet the requirements of IEC 60502-1 : 2004.


The average thickness of the sheath shall be not less than that given in Table 1.

The minimum thickness shall be not fall below the value in Table 1 by more than 20% plus 0.2 mm.

The color of the sheath shall be black.

7. Marking on Cable

The marking items shall be marked with suitable means throughout the length of cable.

1. Manufacturer's name and/or trade mark "  YAZAKI.....: TYE"
2. Year of manufacture
3. Flame retardant "FD"
4. Rated circuit voltage "0.6/1KV"
5. Type of insulation "PVC"
6. Type of cable "CONTROL CABLE"
7. Number of cores and size of conductor
8. The continuous reel length marking (in figure) shall be made on the sheath at every 1 meter

8. Test and Properties

The cable shall be meet the requirements in Test and Inspection and Table 1, when tested in accordance with IEC 60502-1 : 2004 and Amend.1 : 2009, IEC 60228 : 2004, IEC 60332-1 and IEC 60332-3-24; Category C.


Remark: Sunlight resistant test meet the requirement of TIS 293-2541.

9. Packing

The cable shall be placed on non-returnable wooden reels.

The reels shall be covered with suitable covering to provide the cable with physical protection during transportation and during ordinary storage and handling operations.

Each reel shall be clearly marked as follows.

1. Designation "FD-0.6/1KV-CVV"
2. Number of cores and size of conductor
3. Cable length
4. Net and gross weight
5. Manufacturer's name and/or trade mark "  YAZAKI "
6. Rolling direction of reel

Test and Inspection

Routine Tests

- Maximum conductor resistance, Ohm/km specified in Table 1
- AC test voltage for 5 minutes, kV3.5

Sample Tests

- Construction.....specified in Table 1

Type Tests

- Flame retardant tested according to IEC 60332-1 and IEC 60332-3-24; Category C.

Definition concerning the tests

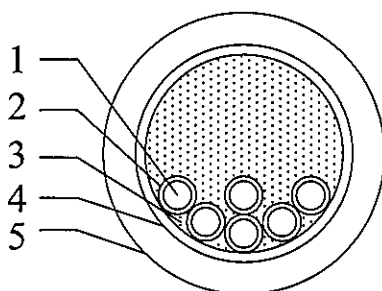
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

Sample tests: Tests made by the manufacturer on samples of completed cable or components taken from a completed cable, at a specified frequency, so as to verify that the finished product meets the specified requirements.

Type tests: Tests made before supplying, on a general commercial basis, a type of cable covered by this standard, in order to demonstrate satisfactory performance characteristics to meet the intended application.

Cable structure

Cross-sectional (Not scale)



No.	Structure	Material
1	Conductor	Flexible stranded annealed copper
2	Insulation	Polyvinyl chloride (PVC/A)
3	Filler	Non-hygroscopic
4	Binder Tape	Spun bond tape or suitable tape
5	Sheath	Flame retardant Polyvinyl chloride (PVC/ST1)

Application: For supervisory electrical equipment, station control circuits, outdoor, suitable installation in the dry or wet cable trenches. Maximum conductor temperature of 70°C for normal operation and 160°C for short circuit conditions.

Table 1

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
2	1.5	Flexible	1.60	0.8	1.8	11.5	13.3	130	300
2	2.5	Flexible	2.10	0.8	1.8	12.5	7.98	160	300
2	4	Flexible	2.60	1.0	1.8	14.0	4.95	220	300
2	6	Flexible	3.40	1.0	1.8	15.5	3.30	300	300
2	10	Flexible	4.60	1.0	1.8	18.0	1.91	430	300
3	1.5	Flexible	1.60	0.8	1.8	11.5	13.3	150	300
3	2.5	Flexible	2.10	0.8	1.8	13.0	7.98	200	300
3	4	Flexible	2.60	1.0	1.8	14.5	4.95	280	300
3	6	Flexible	3.40	1.0	1.8	16.5	3.30	370	300
3	10	Flexible	4.60	1.0	1.8	19.0	1.91	550	300
4	1.5	Flexible	1.60	0.8	1.8	12.5	13.3	180	300
4	2.5	Flexible	2.10	0.8	1.8	14.0	7.98	240	300
4	4	Flexible	2.60	1.0	1.8	16.0	4.95	340	300
4	6	Flexible	3.40	1.0	1.8	18.0	3.30	460	300
4	10	Flexible	4.60	1.0	1.8	21.0	1.91	700	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
5	1.5	Flexible	1.60	0.8	1.8	13.5	13.3	210	300
5	2.5	Flexible	2.10	0.8	1.8	15.0	7.98	290	300
5	4	Flexible	2.60	1.0	1.8	17.5	4.95	410	300
5	6	Flexible	3.40	1.0	1.8	19.5	3.30	550	300
5	10	Flexible	4.60	1.0	1.8	23.0	1.91	850	300
6	1.5	Flexible	1.60	0.8	1.8	14.5	13.3	250	300
6	2.5	Flexible	2.10	0.8	1.8	16.0	7.98	330	300
6	4	Flexible	2.60	1.0	1.8	19.0	4.95	480	300
6	6	Flexible	3.40	1.0	1.8	21.0	3.30	650	300
6	10	Flexible	4.60	1.0	1.8	25.0	1.91	1000	300
7	1.5	Flexible	1.60	0.8	1.8	14.5	13.3	270	300
7	2.5	Flexible	2.10	0.8	1.8	16.0	7.98	350	300
7	4	Flexible	2.60	1.0	1.8	19.0	4.95	500	300
7	6	Flexible	3.40	1.0	1.8	21.0	3.30	700	300
7	10	Flexible	4.60	1.0	1.8	25.0	1.91	1100	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
8	1.5	Flexible	1.60	0.8	1.8	16.0	13.3	300	300
8	2.5	Flexible	2.10	0.8	1.8	17.5	7.98	410	300
8	4	Flexible	2.60	1.0	1.8	20.0	4.95	600	300
8	6	Flexible	3.40	1.0	1.8	23.0	3.30	850	300
8	10	Flexible	4.60	1.0	1.8	27.0	1.91	1300	300
9	1.5	Flexible	1.60	0.8	1.8	17.0	13.3	340	300
9	2.5	Flexible	2.10	0.8	1.8	18.5	7.98	460	300
9	4	Flexible	2.60	1.0	1.8	22.0	4.95	700	300
9	6	Flexible	3.40	1.0	1.8	25.0	3.30	950	300
9	10	Flexible	4.60	1.0	1.8	29.0	1.91	1500	300
10	1.5	Flexible	1.60	0.8	1.8	18.0	13.3	380	300
10	2.5	Flexible	2.10	0.8	1.8	20.0	7.98	500	300
10	4	Flexible	2.60	1.0	1.8	23.0	4.95	750	300
10	6	Flexible	3.40	1.0	1.8	26.0	3.30	1100	300
10	10	Flexible	4.60	1.0	1.8	31.0	1.91	1600	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
11	1.5	Flexible	1.60	0.8	1.8	18.0	13.3	390	300
11	2.5	Flexible	2.10	0.8	1.8	20.0	7.98	550	300
11	4	Flexible	2.60	1.0	1.8	23.0	4.95	800	300
11	6	Flexible	3.40	1.0	1.8	26.0	3.30	1100	300
11	10	Flexible	4.60	1.0	1.8	31.0	1.91	1700	300
12	1.5	Flexible	1.60	0.8	1.8	18.5	13.3	420	300
12	2.5	Flexible	2.10	0.8	1.8	20.0	7.98	600	300
12	4	Flexible	2.60	1.0	1.8	24.0	4.95	850	300
12	6	Flexible	3.40	1.0	1.8	27.0	3.30	1200	300
12	10	Flexible	4.60	1.0	1.8	32.0	1.91	1900	300
13	1.5	Flexible	1.60	0.8	1.8	19.5	13.3	450	300
13	2.5	Flexible	2.10	0.8	1.8	21.0	7.98	600	300
13	4	Flexible	2.60	1.0	1.8	25.0	4.95	950	300
13	6	Flexible	3.40	1.0	1.8	29.0	3.30	1300	300
13	10	Flexible	4.60	1.0	1.9	34.0	1.91	2100	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor strands (No./mm)	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
14	1.5	Flexible	1.60	0.8	1.8	19.5	13.3	470	300
14	2.5	Flexible	2.10	0.8	1.8	21.0	7.98	650	300
14	4	Flexible	2.60	1.0	1.8	25.0	4.95	950	300
14	6	Flexible	3.40	1.0	1.8	29.0	3.30	1300	300
14	10	Flexible	4.60	1.0	1.9	34.0	1.91	2100	300
15	1.5	Flexible	1.60	0.8	1.8	20.0	13.3	490	300
15	2.5	Flexible	2.10	0.8	1.8	22.0	7.98	700	300
15	4	Flexible	2.60	1.0	1.8	26.0	4.95	1000	300
15	6	Flexible	3.40	1.0	1.8	30.0	3.30	1500	300
15	10	Flexible	4.60	1.0	1.9	36.0	1.91	2300	300
16	1.5	Flexible	1.60	0.8	1.8	20.0	13.3	500	300
16	2.5	Flexible	2.10	0.8	1.8	23.0	7.98	700	300
16	4	Flexible	2.60	1.0	1.8	27.0	4.95	1100	300
16	6	Flexible	3.40	1.0	1.8	31.0	3.30	1500	300
16	10	Flexible	4.60	1.0	1.9	36.0	1.91	2400	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
17	1.5	Flexible	1.60	0.8	1.8	21.0	13.3	550	300
17	2.5	Flexible	2.10	0.8	1.8	24.0	7.98	750	300
17	4	Flexible	2.60	1.0	1.8	28.0	4.95	1200	300
17	6	Flexible	3.40	1.0	1.8	32.0	3.30	1700	300
17	10	Flexible	4.60	1.0	1.9	38.0	1.91	2600	300
18	1.5	Flexible	1.60	0.8	1.8	21.0	13.3	550	300
18	2.5	Flexible	2.10	0.8	1.8	24.0	7.98	800	300
18	4	Flexible	2.60	1.0	1.8	28.0	4.95	1200	300
18	6	Flexible	3.40	1.0	1.9	32.0	3.30	1700	300
18	10	Flexible	4.60	1.0	2.0	39.0	1.91	2700	300
19	1.5	Flexible	1.60	0.8	1.8	21.0	13.3	600	300
19	2.5	Flexible	2.10	0.8	1.8	24.0	7.98	800	300
19	4	Flexible	2.60	1.0	1.8	28.0	4.95	1200	300
19	6	Flexible	3.40	1.0	1.9	32.0	3.30	1800	300
19	10	Flexible	4.60	1.0	2.0	39.0	1.91	2800	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
20	1.5	Flexible	1.60	0.8	1.8	22.0	13.3	600	300
20	2.5	Flexible	2.10	0.8	1.8	24.0	7.98	850	300
20	4	Flexible	2.60	1.0	1.8	29.0	4.95	1300	300
20	6	Flexible	3.40	1.0	1.9	33.0	3.30	1900	300
21	1.5	Flexible	1.60	0.8	1.8	22.0	13.3	650	300
21	2.5	Flexible	2.10	0.8	1.8	25.0	7.98	900	300
21	4	Flexible	2.60	1.0	1.8	30.0	4.95	1400	300
21	6	Flexible	3.40	1.0	1.9	34.0	3.30	1900	300
22	1.5	Flexible	1.60	0.8	1.8	24.0	13.3	700	300
22	2.5	Flexible	2.10	0.8	1.8	26.0	7.98	950	300
22	4	Flexible	2.60	1.0	1.9	31.0	4.95	1500	300
22	6	Flexible	3.40	1.0	2.0	36.0	3.30	2100	300
23	1.5	Flexible	1.60	0.8	1.8	24.0	13.3	700	300
23	2.5	Flexible	2.10	0.8	1.8	26.0	7.98	1000	300
23	4	Flexible	2.60	1.0	1.9	31.0	4.95	1500	300
23	6	Flexible	3.40	1.0	2.0	36.0	3.30	2100	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
24	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	750	300
24	2.5	Flexible	2.10	0.8	1.8	28.0	7.98	1000	300
24	4	Flexible	2.60	1.0	1.9	33.0	4.95	1600	300
24	6	Flexible	3.40	1.0	2.0	38.0	3.30	2200	300
25	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	750	300
25	2.5	Flexible	2.10	0.8	1.8	28.0	7.98	1100	300
25	4	Flexible	2.60	1.0	1.9	33.0	4.95	1600	300
25	6	Flexible	3.40	1.0	2.0	38.0	3.30	2300	300
26	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	800	300
26	2.5	Flexible	2.10	0.8	1.8	28.0	7.98	1100	300
26	4	Flexible	2.60	1.0	1.9	33.0	4.95	1700	300
26	6	Flexible	3.40	1.0	2.0	38.0	3.30	2400	300
27	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	800	300
27	2.5	Flexible	2.10	0.8	1.8	28.0	7.98	1100	300
27	4	Flexible	2.60	1.0	2.0	34.0	4.95	1700	300
27	6	Flexible	3.40	1.0	2.1	39.0	3.30	2500	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Sheath thickness nominal (mm)	Overall diameter approx. (mm)	Conductor resistance at 20°C maximum (Ohm/km)	Weight of cable approx. (kg/km)	Standard packing length (m)
28	1.5	Flexible	1.60	0.8	1.8	26.0	13.3	850	300
28	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1200	300
28	4	Flexible	2.60	1.0	2.0	36.0	4.95	1800	300
29	1.5	Flexible	1.60	0.8	1.8	26.0	13.3	850	300
29	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1200	300
29	4	Flexible	2.60	1.0	2.0	36.0	4.95	1800	300
30	1.5	Flexible	1.60	0.8	1.8	26.0	13.3	900	300
30	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1200	300
30	4	Flexible	2.60	1.0	2.0	36.0	4.95	1900	300