

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

0.6/1(1.2)kV

XLPE Insulated PVC Sheathed


Flame Retardant Control Cable

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

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APP. A 

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CUSTOMER

Rev.	Date	Description
0	27/04/2020	Issued specification
1	10/07/2020	Add size 19 x 2.5 mm ²
2	15/01/2021	-Cancel cable code "0010" -Correct the table 1
3	26/4/2021	Add size 8 x 1.5 mm ²
4	20/10/2021	Add size 18 x 2.5 mm ²

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 cross-linked polyethylene (XLPE) insulated polyvinyl chloride (PVC) sheathed flame retardant control cable.

The cable shall be based on 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

For size $\leq 6 \text{ mm}^2$:

The conductor shall be non-compacted concentric stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 2.

The direction of lay shall be left-hand (S) lay.

For size 10 mm^2 :

The conductor shall be compacted concentric stranded uncoated annealed copper conductor in accordance with IEC 60228 : 2004, Class 2.

The direction of lay shall be left-hand (S) lay.

3. Insulation

The insulation shall be cross-linked polyethylene (XLPE) 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.

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

5. Core Identification

The cores shall be identified by colors or by numbers 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 white insulation.

(White color is natural color of XLPE insulation)

6. Sheath

The sheath shall be sunlight resistant and flame retardant polyvinyl chloride (PVC/ST2) compound meet the requirements of IEC 60502-1 : 2004.

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

The minimum thickness shall 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 "XLPE"

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 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-CCV"
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, kV..... 3.5

Sample Tests

- Construction specified in Table 1
- Hot set test at $200\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ for XLPE
 - Maximum elongation under load (%) 175
 - Maximum permanent elongation after cooling (%).....15

Type Tests

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

Definition concerning the tests

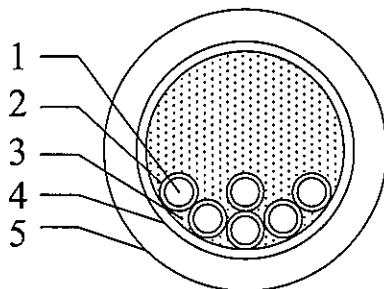
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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	Non-compacted & Compacted concentric stranded annealed copper
2	Insulation	Cross-Linked Polyethylene (XLPE)
3	Filler	PP Calcium Yarn (Non-hygroscopic)
4	Binder tape	Spund bond tape or suitable tape
5	Sheath	Flame retardant polyvinyl chloride (PVC/ST2)

Application: Use for installation in open tray, conduit, underground duct trench or direct burial in ground, at wet or dry location. Maximum conductor temperature of 90°C for normal operation and 250°C for short circuit conditions.

Table 1

No. of cores	Size (mm ²)	Conductor (wires/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	7/Non-compacted	1.59	0.7	1.8	11.0	12.1	130	300
2	2.5	7/Non-compacted	2.01	0.7	1.8	12.0	7.41	160	300
3	1.5	7/Non-compacted	1.59	0.7	1.8	11.5	12.1	150	300
3	2.5	7/Non-compacted	2.01	0.7	1.8	12.5	7.41	190	300
4	1.5	7/Non-compacted	1.59	0.7	1.8	12.0	12.1	180	300
4	2.5	7/Non-compacted	2.01	0.7	1.8	13.5	7.41	230	300
4	6	7/Non-compacted	3.12	0.7	1.8	16.0	3.08	400	300
5	1.5	7/Non-compacted	1.59	0.7	1.8	13.0	12.1	210	300
5	2.5	7/Non-compacted	2.01	0.7	1.8	14.5	7.41	270	300
6	1.5	7/Non-compacted	1.59	0.7	1.8	14.0	12.1	240	300
6	2.5	7/Non-compacted	2.01	0.7	1.8	16.0	7.41	320	300
6	4	7/Non-compacted	2.55	0.7	1.8	17.0	4.61	420	300
6	6	7/Non-compacted	3.12	0.7	1.8	19.0	3.08	550	300
6	10	7/Compacted	3.80	0.7	1.8	21.0	1.83	800	300
7	1.5	7/Non-compacted	1.59	0.7	1.8	14.0	12.1	260	300
7	2.5	7/Non-compacted	2.01	0.7	1.8	15.5	7.41	340	300
8	1.5	7/Non-compacted	1.59	0.7	1.8	15.5	12.1	290	300
8	4	7/Non-compacted	2.55	0.7	1.8	18.5	4.61	500	300
9	2.5	7/Non-compacted	2.01	0.7	1.8	18.0	7.41	430	300
10	1.5	7/Non-compacted	1.59	0.7	1.8	17.0	12.1	360	300
10	2.5	7/Non-compacted	2.01	0.7	1.8	19.5	7.41	470	300
12	1.5	7/Non-compacted	1.59	0.7	1.8	18.0	12.1	400	300
12	2.5	7/Non-compacted	2.01	0.7	1.8	20.5	7.41	550	300
15	1.5	7/Non-compacted	1.59	0.7	1.8	19.0	12.1	460	300
15	2.5	7/Non-compacted	2.01	0.7	1.8	22.0	7.41	650	300
16	1.5	7/Non-compacted	1.59	0.7	1.8	19.5	12.1	480	300
16	2.5	7/Non-compacted	2.01	0.7	1.8	22.5	7.41	650	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor (wires/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)
18	2.5	7/Non-compacted	2.01	0.7	1.8	23.5	7.41	700	300
19	1.5	7/Non-compacted	1.59	0.7	1.8	21.0	12.1	550	300
19	2.5	7/Non-compacted	2.01	0.7	1.8	23.5	7.41	750	300
19	4	7/Non-compacted	2.55	0.7	1.8	26.0	4.61	1100	300
20	1.5	7/Non-compacted	1.59	0.7	1.8	21.5	12.1	600	300
20	2.5	7/Non-compacted	2.01	0.7	1.8	24.0	7.41	800	300
21	1.5	7/Non-compacted	1.59	0.7	1.8	22.0	12.1	600	300
24	2.5	7/Non-compacted	2.01	0.7	1.8	27.0	7.41	950	300
25	2.5	7/Non-compacted	2.01	0.7	1.8	27.0	7.41	950	300
27	1.5	7/Non-compacted	1.59	0.7	1.8	24.5	12.1	750	300
27	2.5	7/Non-compacted	2.01	0.7	1.8	27.5	7.41	1000	300
27	4	7/Non-compacted	2.55	0.7	1.9	31.0	4.61	1500	300
30	1.5	7/Non-compacted	1.59	0.7	1.8	25.5	12.1	800	300
30	2.5	7/Non-compacted	2.01	0.7	1.8	28.5	7.41	1100	300