

SPECIFICATION

For

FD-0.6/1KV-CVV-S-SWA

0.6/1(1.2)kV PVC Insulated PVC Inner Sheathed

Steel Wire Armored PVC Outer Sheathed Flame Retardant

Shielded Control Cable

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

BY



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Rev.	Date	Description
0	10/10/2019	Issued specification
1	11/12/2019	Correct the detail in Cable structure

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CUSTOMER

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) inner sheathed steel wire armored polyvinyl chloride (PVC) outer sheathed flame retardant shielded 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

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.

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

5. Core Identification

The cores shall be identified by colors or by number 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. Metallic Shield

The metallic shield shall be an uncoated annealed copper tape and applied helically with a lap over the binder tape.

The thickness of the copper tape shall be approximate 0.1 mm.

A suitable separator tape shall be applied helically over the metallic shield.

7. Inner Sheath

The inner sheath shall be polyvinyl chloride (PVC) compound applied over the separator tape.

The approximate thickness given in Table 1.

The color of the inner sheath shall be black.

8. Steel Wire Armor

The armor shall be galvanized round steel wire applied with a minimum gap between adjacent wires over the inner sheathed.

A suitable tape may be applied helically over the armored core.

9. Outer Sheath

The outer 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 outer sheath 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 20% plus 0.2 mm.

The color of the outer sheath shall be black.

10. 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 " SHIELD CONTROL CABLE "

7. Number of cores and size of conductor

11. 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.

12. 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-S-SWA"
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

Type Tests

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

Definition concerning the tests

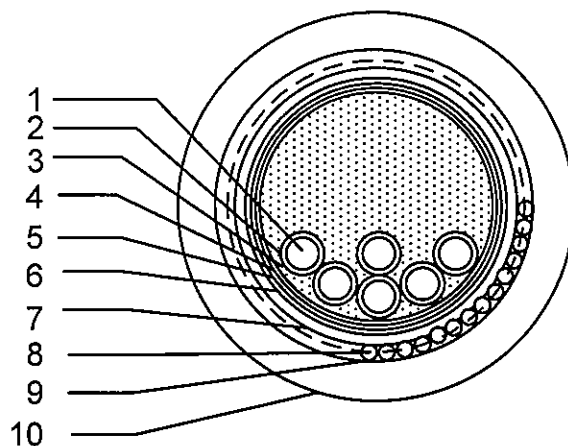
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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	PP Calcium Yarn (Non-hygrosopic)
4	Binder tape	Spund bond tape or suitable tape
5	Metallic shield	Copper tape
6	Separator tape	Spund bond tape or suitable tape
7	Inner Sheath	Polyvinyl chloride (PVC)
8	Aarmor	Galvanized steel wire
9	Binder tape	PS tape or suitable tape
10	Outer 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)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Armor wire dia. nominal (mm)	Outer 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	2.5	Flexible	2.10	0.8	1.2	11.5	1.25	1.8	18.0	7.98	600	300
3	2.5	Flexible	2.10	0.8	1.2	12.0	1.25	1.8	18.5	7.98	660	300
3	4	Flexible	2.60	1.0	1.2	14.0	1.25	1.8	20	4.95	800	300
3	6	Flexible	3.40	1.0	1.2	15.5	1.60	1.8	23	3.30	1100	300
3	10	Flexible	4.60	1.0	1.2	18.0	1.60	1.8	25	1.91	1400	300
4	1.5	Flexible	1.60	0.8	1.2	12.0	1.25	1.8	18.5	13.3	650	300
4	2.5	Flexible	2.10	0.8	1.2	13.0	1.25	1.8	19.5	7.98	750	300
4	4	Flexible	2.60	1.0	1.2	15.0	1.25	1.8	22	4.95	900	300
5	1.5	Flexible	1.60	0.8	1.2	13.0	1.25	1.8	19.5	13.3	700	300
5	2.5	Flexible	2.10	0.8	1.2	14.0	1.25	1.8	21	7.98	800	300
7	1.5	Flexible	1.60	0.8	1.2	14.0	1.25	1.8	20	13.3	800	300
7	2.5	Flexible	2.10	0.8	1.2	15.5	1.25	1.8	22	7.98	950	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness approx. (mm)	Dia. of inner sheath approx. (mm)	Armor wire dia. nominal (mm)	Outer 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)
9	1.5	Flexible	1.60	0.8	1.2	16.0	1.60	1.8	23	13.3	1100	300
9	2.5	Flexible	2.10	0.8	1.2	18.0	1.60	1.8	25	7.98	1300	300
10	2.5	Flexible	2.10	0.8	1.2	19.0	1.60	1.8	26	7.98	1400	300
12	2.5	Flexible	2.10	0.8	1.2	20	1.60	1.8	27	7.98	1500	300
14	1.5	Flexible	1.60	0.8	1.2	19.0	1.60	1.8	26	13.3	1300	300
15	2.5	Flexible	2.10	0.8	1.2	21	1.60	1.8	29	7.98	1600	300
19	1.5	Flexible	1.60	0.8	1.2	21	1.60	1.8	28	13.3	1500	300
30	1.5	Flexible	1.60	0.8	1.2	25	2.00	2.0	34	13.3	2300	300