

SPECIFICATION**For****0.6/1KV-CVV-S-SWA**

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

Steel Wire Armored PVC Outer Sheathed

Shielded Control Cable

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

BY



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CUSTOMER

Rev.	Date	Description
0	16/9/2021	Issued specification
1	13/7/2022	Add size
2	16/11/2022	Add size
3	1/12/2022	Add size
4	3/10/2023	Add size 6 x 4, 10 x 6 and 24 x 2.5 mm ²
5	26/11/2024	Update specification

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 shielded control cable.

The cable shall be in accordance with IEC 60502-1 : 2021.

The finished cables shall meet the flame test requirements per IEC 60332-1.

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 in the outermost layer.

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

3. Insulation

The insulation shall be polyvinyl chloride (PVC/A) compound meet the requirements of IEC 60502-1 : 2021.

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

The minimum thickness shall not fall below 90% of the nominal value in Table 1 by more than 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 color or by 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 20-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 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 average 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 separator tape shall be applied helically over the armored core.

9. Outer Sheath

The outer sheath shall be sunlight resistant polyvinyl chloride (PVC/ST1) compound meet the requirements of IEC 60502-1 : 2021.


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

The minimum thickness shall not fall below 80% of the nominal value in Table 1 by more than 0.2 mm.

The color of the outer sheath shall be black.

10. Marking on Cable

The marking items shall be marked by printed at intervals not exceeding 1 meter with suitable means throughout the length of cable.

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

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 : 2021, IEC 60228 : 2004 and IEC 60332-1.


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 "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, kV3.5

Sample Tests

- Construction.....specified in Table 1

Type Tests

- Flame retardant tested according to IEC 60332-1.

Definition concerning the tests

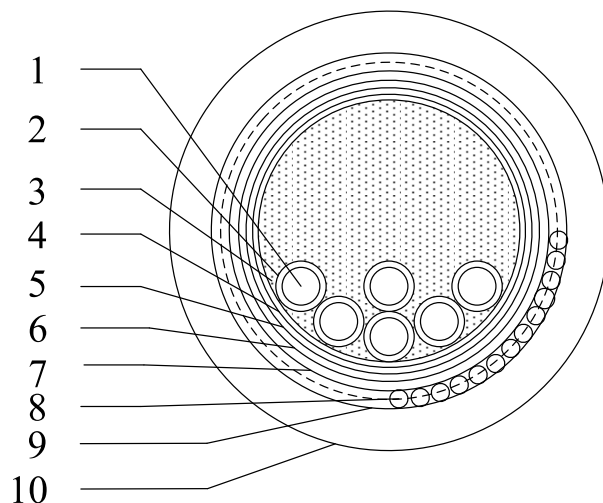
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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) compound
3	Filler	Non-hygroscopic
4	Binder tape	Spun bond tape or suitable tape
5	Metallic shield	Copper tape
6	Separator tape	Spun bond tape or suitable tape
7	Inner sheath	Polyvinyl chloride (PVC) compound
8	Aarmor	Galvanized steel wire
9	Separator tape	PS tape or suitable tape
10	Outer sheath	Polyvinyl chloride (PVC/ST1) compound

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 nominal (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	1.5	Flexible	1.60	0.8	1.2	11.0	1.25	1.8	18.0	13.3	547	300
2	2.5	Flexible	2.10	0.8	1.2	12.0	1.25	1.8	19.0	7.98	619	300
2	4	Flexible	2.60	1.0	1.2	14.0	1.25	1.8	20.5	4.95	738	300
2	6	Flexible	3.40	1.0	1.2	15.5	1.25	1.8	22.0	3.30	859	300
2	10	Flexible	4.60	1.0	1.2	18.0	1.60	1.8	25.0	1.91	1213	300
3	1.5	Flexible	1.60	0.8	1.2	11.5	1.25	1.8	18.0	13.3	583	300
3	2.5	Flexible	2.10	0.8	1.2	12.5	1.25	1.8	19.5	7.98	669	300
3	4	Flexible	2.60	1.0	1.2	14.5	1.25	1.8	21.0	4.95	807	300
3	6	Flexible	3.40	1.0	1.2	16.0	1.60	1.8	23.5	3.30	1091	300
3	10	Flexible	4.60	1.0	1.2	18.5	1.60	1.8	26.0	1.91	1380	300
4	1.5	Flexible	1.60	0.8	1.2	12.5	1.25	1.8	19.0	13.3	640	300
4	2.5	Flexible	2.10	0.8	1.2	13.5	1.25	1.8	20.5	7.98	740	300
4	4	Flexible	2.60	1.0	1.2	15.5	1.25	1.8	22.5	4.95	915	300
4	6	Flexible	3.40	1.0	1.2	17.5	1.60	1.8	25.0	3.30	1246	300
4	10	Flexible	4.60	1.0	1.2	20.5	1.60	1.8	28.0	1.91	1598	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Dia. of inner sheath approx. (mm)	Aarmor 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)
5	1.5	Flexible	1.60	0.8	1.2	13.5	1.25	1.8	20.0	13.3	717	300
5	2.5	Flexible	2.10	0.8	1.2	15.0	1.25	1.8	21.5	7.98	831	300
5	4	Flexible	2.60	1.0	1.2	17.0	1.60	1.8	24.5	4.95	1175	300
5	6	Flexible	3.40	1.0	1.2	19.5	1.60	1.8	27.0	3.30	1416	300
5	10	Flexible	4.60	1.0	1.2	22.5	1.60	1.9	30.5	1.91	1875	300
6	1.5	Flexible	1.60	0.8	1.2	14.5	1.25	1.8	21.0	13.3	780	300
6	2.5	Flexible	2.10	0.8	1.2	16.0	1.25	1.8	22.5	7.98	915	300
6	4	Flexible	2.60	1.0	1.2	18.5	1.60	1.8	26.0	4.95	1306	300
6	6	Flexible	3.40	1.0	1.2	21.0	1.60	1.8	28.5	3.30	1581	300
6	10	Flexible	4.60	1.0	1.2	24.5	1.60	1.9	32.5	1.91	2123	300
7	1.5	Flexible	1.60	0.8	1.2	14.5	1.25	1.8	21.0	13.3	798	300
7	2.5	Flexible	2.10	0.8	1.2	16.0	1.25	1.8	22.5	7.98	943	300
7	4	Flexible	2.60	1.0	1.2	18.5	1.60	1.8	26.0	4.95	1350	300
7	6	Flexible	3.40	1.0	1.2	21.0	1.60	1.8	28.5	3.30	1646	300
7	10	Flexible	4.60	1.0	1.2	24.5	1.60	1.9	32.5	1.91	2229	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (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)
8	1.5	Flexible	1.60	0.8	1.2	15.5	1.25	1.8	22.5	13.3	870	300
8	2.5	Flexible	2.10	0.8	1.2	17.0	1.60	1.8	24.5	7.98	1173	300
8	4	Flexible	2.60	1.0	1.2	20.0	1.60	1.8	27.5	4.95	1486	300
8	6	Flexible	3.40	1.0	1.2	23.0	1.60	1.9	30.5	3.30	1865	300
8	10	Flexible	4.60	1.0	1.2	26.5	2.00	2.1	36.0	1.91	2777	300
9	1.5	Flexible	1.60	0.8	1.2	16.5	1.60	1.8	24.0	13.3	1087	300
9	2.5	Flexible	2.10	0.8	1.2	18.5	1.60	1.8	26.0	7.98	1273	300
9	4	Flexible	2.60	1.0	1.2	21.5	1.60	1.8	29.0	4.95	1629	300
9	6	Flexible	3.40	1.0	1.2	24.5	1.60	1.9	32.5	3.30	2065	300
9	10	Flexible	4.60	1.0	1.2	29.0	2.00	2.1	38.0	1.91	3055	300
10	1.5	Flexible	1.60	0.8	1.2	18.0	1.60	1.8	25.5	13.3	1164	300
10	2.5	Flexible	2.10	0.8	1.2	20.0	1.60	1.8	27.0	7.98	1360	300
10	4	Flexible	2.60	1.0	1.2	23.5	1.60	1.9	31.0	4.95	1798	300
10	6	Flexible	3.40	1.0	1.2	26.5	2.00	2.0	35.5	3.30	2478	300
10	10	Flexible	4.60	1.0	1.2	31.0	2.00	2.2	40.5	1.91	3353	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Dia. of inner sheath approx. (mm)	Aarmor 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)
11	1.5	Flexible	1.60	0.8	1.2	18.0	1.60	1.8	25.5	13.3	1180	300
11	2.5	Flexible	2.10	0.8	1.2	20.0	1.60	1.8	27.0	7.98	1387	300
11	4	Flexible	2.60	1.0	1.2	23.5	1.60	1.9	31.0	4.95	1838	300
11	6	Flexible	3.40	1.0	1.2	26.5	2.00	2.0	35.5	3.30	2537	300
11	10	Flexible	4.60	1.0	1.2	31.0	2.00	2.2	40.5	1.91	3456	300
12	1.5	Flexible	1.60	0.8	1.2	18.5	1.60	1.8	26.0	13.3	1229	300
12	2.5	Flexible	2.10	0.8	1.2	20.5	1.60	1.8	28.0	7.98	1476	300
12	4	Flexible	2.60	1.0	1.2	24.0	1.60	1.9	32.0	4.95	1944	300
12	6	Flexible	3.40	1.0	1.2	27.5	2.00	2.1	36.5	3.30	2722	300
12	10	Flexible	4.60	1.0	1.2	32.5	2.00	2.2	41.5	1.91	3664	300
13	1.5	Flexible	1.60	0.8	1.2	19.5	1.60	1.8	27.0	13.3	1288	300
13	2.5	Flexible	2.10	0.8	1.2	21.5	1.60	1.8	29.0	7.98	1562	300
13	4	Flexible	2.60	1.0	1.2	25.5	1.60	2.0	33.5	4.95	2077	300
13	6	Flexible	3.40	1.0	1.2	29.0	2.00	2.1	38.0	3.30	2875	300
13	10	Flexible	4.60	1.0	1.2	34.0	2.00	2.3	43.5	1.91	3932	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (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)
14	1.5	Flexible	1.60	0.8	1.2	19.5	1.60	1.8	27.0	13.3	1293	300
14	2.5	Flexible	2.10	0.8	1.2	21.5	1.60	1.8	29.0	7.98	1579	300
14	4	Flexible	2.60	1.0	1.2	25.5	1.60	2.0	33.5	4.95	2107	300
14	6	Flexible	3.40	1.0	1.2	29.0	2.00	2.1	38.0	3.30	2921	300
14	10	Flexible	4.60	1.0	1.2	34.0	2.00	2.3	43.5	1.91	4013	300
15	1.5	Flexible	1.60	0.8	1.2	20.0	1.60	1.8	27.5	13.3	1368	300
15	2.5	Flexible	2.10	0.8	1.2	22.5	1.60	1.9	30.0	7.98	1668	300
15	4	Flexible	2.60	1.0	1.2	26.5	1.60	2.0	34.5	4.95	2217	300
15	6	Flexible	3.40	1.0	1.2	30.0	2.00	2.2	39.0	3.30	3115	300
15	10	Flexible	4.60	1.0	1.2	35.5	2.00	2.3	45.0	1.91	4246	300
16	1.5	Flexible	1.60	0.8	1.2	20.5	1.60	1.8	28.0	13.3	1391	300
16	2.5	Flexible	2.10	0.8	1.2	22.5	1.60	1.9	30.5	7.98	1736	300
16	4	Flexible	2.60	1.0	1.2	27.0	2.00	2.0	36.0	4.95	2525	300
16	6	Flexible	3.40	1.0	1.2	30.5	2.00	2.2	40.0	3.30	3188	300
16	10	Flexible	4.60	1.0	1.2	36.0	2.00	2.4	46.0	1.91	4412	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (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)
17	1.5	Flexible	1.60	0.8	1.2	21.5	1.60	1.8	29.0	13.3	1490	300
17	2.5	Flexible	2.10	0.8	1.2	24.0	1.60	1.9	31.5	7.98	1839	300
17	4	Flexible	2.60	1.0	1.2	28.5	2.00	2.1	37.5	4.95	2714	300
17	6	Flexible	3.40	1.0	1.2	32.0	2.00	2.2	41.5	3.30	3434	300
17	10	Flexible	4.60	1.0	1.3	38.5	2.50	2.5	49.5	1.91	5207	300
18	1.5	Flexible	1.60	0.8	1.2	21.5	1.60	1.8	29.0	13.3	1491	300
18	2.5	Flexible	2.10	0.8	1.2	24.0	1.60	1.9	31.5	7.98	1851	300
18	4	Flexible	2.60	1.0	1.2	28.5	2.00	2.1	37.5	4.95	2723	300
18	6	Flexible	3.40	1.0	1.2	32.0	2.00	2.2	41.5	3.30	3448	300
18	10	Flexible	4.60	1.0	1.3	38.5	2.50	2.5	49.5	1.91	5249	300
19	1.5	Flexible	1.60	0.8	1.2	21.5	1.60	1.8	29.0	13.3	1509	300
19	2.5	Flexible	2.10	0.8	1.2	24.0	1.60	1.9	31.5	7.98	1878	300
19	4	Flexible	2.60	1.0	1.2	28.5	2.00	2.1	37.5	4.95	2767	300
19	6	Flexible	3.40	1.0	1.2	32.0	2.00	2.2	41.5	3.30	3512	300
19	10	Flexible	4.60	1.0	1.3	38.5	2.50	2.5	49.5	1.91	5353	300

Table 1 (continued)

No. of cores	Size (mm ²)	Conductor type	Conductor diameter approx. (mm)	Insulation thickness nominal (mm)	Inner sheath thickness nominal (mm)	Dia. of inner sheath approx. (mm)	Aarmor 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)
20	1.5	Flexible	1.60	0.8	1.2	22.0	1.60	1.8	29.5	13.3	1563	300
20	2.5	Flexible	2.10	0.8	1.2	24.5	1.60	1.9	32.0	7.98	1945	300
20	4	Flexible	2.60	1.0	1.2	29.0	2.00	2.1	38.0	4.95	2873	300
20	6	Flexible	3.40	1.0	1.2	33.0	2.00	2.3	42.5	3.30	3671	300