

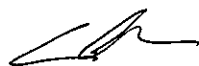
SPECIFICATION**For****0.6/1KV-CVV-SWA(0010)**

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

Steel Wire Armored PVC Outer Sheathed Control Cable

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

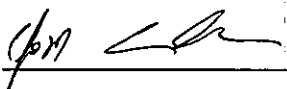
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CUSTOMER

Rev.	Date	Description
0	11/11/2019	Issued 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 control cable.

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

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.

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 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 30-cores :

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

6. Inner Sheath

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

The approximate thickness given in Table 1.

The color of the inner sheath shall be black.

7. 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 shall be applied helically over the armored core.

8. Outer Sheath

The outer sheath shall be sunlight resistant 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.

9. 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. Rated circuit voltage "0.6/1KV"

4. Type of insulation "PVC"

5. Type of cable "CONTROL CABLE"

6. Number of cores and size of conductor

7. The continuous reel length marking (in figure) shall be made on the sheath at every 1 meter

10. 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 and IEC 60332-1.


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

11. 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-SWA(0010)"
2. Number of cores and size of conductor
3. Cable length
4. Net and gross weight
5. Manufacturer's name and/or trade mark "  "
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

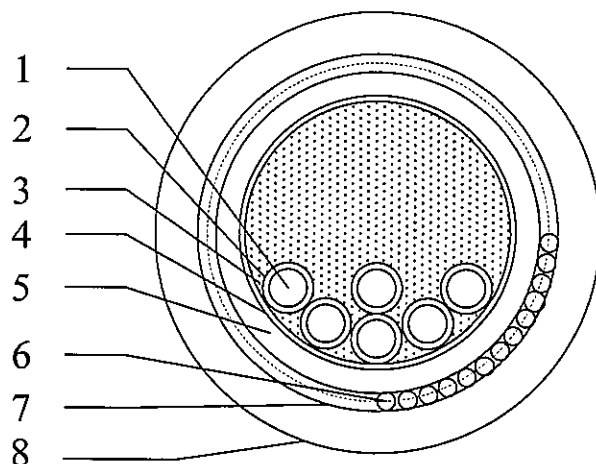
Routine tests: Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

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)
3	Filler	PP calcium yarn (Non-hygroscopic)
4	Binder Tape	Spund bond tape or suitable tape
5	Inner sheath	Polyvinyl chloride (PVC)
6	Aarmor	Galvanized steel wire
7	Binder tape	PS tape or suitable tape
8	Outer sheath	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	1.5	Flexible	1.60	0.8	1.2	10.0	0.80	1.8	15.5	13.3	370	300
2	2.5	Flexible	2.10	0.8	1.2	11.0	1.25	1.8	17.5	7.98	550	300
2	4	Flexible	2.60	1.0	1.2	12.5	1.25	1.8	19.5	4.95	650	300
2	6	Flexible	3.40	1.0	1.2	14.0	1.25	1.8	21	3.30	800	300
2	10	Flexible	4.60	1.0	1.2	16.5	1.60	1.8	24	1.91	1100	300
3	1.5	Flexible	1.60	0.8	1.2	10.5	0.80	1.8	16.0	13.3	410	300
3	2.5	Flexible	2.10	0.8	1.2	11.5	1.25	1.8	18.0	7.98	600	300
3	4	Flexible	2.60	1.0	1.2	13.5	1.25	1.8	20	4.95	750	300
3	6	Flexible	3.40	1.0	1.2	15.0	1.25	1.8	22	3.30	900	300
3	10	Flexible	4.60	1.0	1.2	17.5	1.60	1.8	25	1.91	1300	300
4	1.5	Flexible	1.60	0.8	1.2	11.0	1.25	1.8	18.0	13.3	550	300
4	2.5	Flexible	2.10	0.8	1.2	12.5	1.25	1.8	19.0	7.98	650	300
4	4	Flexible	2.60	1.0	1.2	14.5	1.25	1.8	21	4.95	850	300
4	6	Flexible	3.40	1.0	1.2	16.5	1.60	1.8	24	3.30	1100	300
4	10	Flexible	4.60	1.0	1.2	19.5	1.60	1.8	26	1.91	1500	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)
5	1.5	Flexible	1.60	0.8	1.2	12.5	1.25	1.8	19.0	13.3	650	300
5	2.5	Flexible	2.10	0.8	1.2	13.5	1.25	1.8	20	7.98	750	300
5	4	Flexible	2.60	1.0	1.2	16.0	1.60	1.8	23	4.95	1100	300
5	6	Flexible	3.40	1.0	1.2	18.0	1.60	1.8	25	3.30	1300	300
5	10	Flexible	4.60	1.0	1.2	21	2.00	1.8	29	1.91	1900	300
6	1.5	Flexible	1.60	0.8	1.2	13.5	1.25	1.8	20	13.3	700	300
6	2.5	Flexible	2.10	0.8	1.2	15.0	1.25	1.8	21	7.98	850	300
6	4	Flexible	2.60	1.0	1.2	17.5	1.60	1.8	25	4.95	1200	300
6	6	Flexible	3.40	1.0	1.2	20	1.60	1.8	27	3.30	1500	300
6	10	Flexible	4.60	1.0	1.2	23	2.00	1.8	31	1.91	2200	300
7	1.5	Flexible	1.60	0.8	1.2	13.5	1.25	1.8	20	13.3	700	300
7	2.5	Flexible	2.10	0.8	1.2	15.0	1.25	1.8	21	7.98	850	300
7	4	Flexible	2.60	1.0	1.2	17.5	1.60	1.8	25	4.95	1200	300
7	6	Flexible	3.40	1.0	1.2	20	1.60	1.8	27	3.30	1500	300
7	10	Flexible	4.60	1.0	1.2	23	2.00	1.8	31	1.91	2200	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)
8	1.5	Flexible	1.60	0.8	1.2	14.5	1.25	1.8	21	13.3	800	300
8	2.5	Flexible	2.10	0.8	1.2	16.0	1.60	1.8	23	7.98	1100	300
8	4	Flexible	2.60	1.0	1.2	19.0	1.60	1.8	26	4.95	1400	300
8	6	Flexible	3.40	1.0	1.2	21	2.00	1.8	30	3.30	1900	300
8	10	Flexible	4.60	1.0	1.2	25	2.00	1.9	34	1.91	2600	300
9	1.5	Flexible	1.60	0.8	1.2	15.5	1.25	1.8	22	13.3	850	300
9	2.5	Flexible	2.10	0.8	1.2	17.5	1.60	1.8	24	7.98	1200	300
9	4	Flexible	2.60	1.0	1.2	20	1.60	1.8	28	4.95	1500	300
9	6	Flexible	3.40	1.0	1.2	23	2.00	1.8	31	3.30	2100	300
9	10	Flexible	4.60	1.0	1.2	28	2.00	1.9	36	1.91	2800	300
10	1.5	Flexible	1.60	0.8	1.2	16.5	1.60	1.8	24	13.3	1100	300
10	2.5	Flexible	2.10	0.8	1.2	18.5	1.60	1.8	26	7.98	1300	300
10	4	Flexible	2.60	1.0	1.2	22	2.00	1.8	30	4.95	1900	300
10	6	Flexible	3.40	1.0	1.2	25	2.00	1.9	34	3.30	2300	300
10	10	Flexible	4.60	1.0	1.2	30	2.00	2.0	39	1.91	3100	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)
11	1.5	Flexible	1.60	0.8	1.2	16.5	1.60	1.8	24	13.3	1100	300
11	2.5	Flexible	2.10	0.8	1.2	18.5	1.60	1.8	26	7.98	1300	300
11	4	Flexible	2.60	1.0	1.2	22	2.00	1.8	30	4.95	1900	300
11	6	Flexible	3.40	1.0	1.2	25	2.00	1.9	34	3.30	2300	300
11	10	Flexible	4.60	1.0	1.2	30	2.00	2.0	39	1.91	3200	300
12	1.5	Flexible	1.60	0.8	1.2	17.5	1.60	1.8	24	13.3	1100	300
12	2.5	Flexible	2.10	0.8	1.2	19.5	1.60	1.8	26	7.98	1400	300
12	4	Flexible	2.60	1.0	1.2	23	2.00	1.8	31	4.95	2000	300
12	6	Flexible	3.40	1.0	1.2	26	2.00	1.9	35	3.30	2500	300
12	10	Flexible	4.60	1.0	1.2	31	2.00	2.0	40	1.91	3400	300
13	1.5	Flexible	1.60	0.8	1.2	18.0	1.60	1.8	25	13.3	1200	300
13	2.5	Flexible	2.10	0.8	1.2	20	1.60	1.8	27	7.98	1400	300
13	4	Flexible	2.60	1.0	1.2	24	2.00	1.9	33	4.95	2100	300
13	6	Flexible	3.40	1.0	1.2	27	2.00	1.9	36	3.30	2700	300
13	10	Flexible	4.60	1.0	1.2	33	2.00	2.1	42	1.91	3700	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)
14	1.5	Flexible	1.60	0.8	1.2	18.0	1.60	1.8	25	13.3	1200	300
14	2.5	Flexible	2.10	0.8	1.2	20	1.60	1.8	27	7.98	1500	300
14	4	Flexible	2.60	1.0	1.2	24	2.00	1.9	33	4.95	2200	300
14	6	Flexible	3.40	1.0	1.2	27	2.00	1.9	36	3.30	2700	300
14	10	Flexible	4.60	1.0	1.2	33	2.00	2.1	42	1.91	3800	300
15	1.5	Flexible	1.60	0.8	1.2	19.0	1.60	1.8	26	13.3	1200	300
15	2.5	Flexible	2.10	0.8	1.2	21	1.60	1.8	28	7.98	1500	300
15	4	Flexible	2.60	1.0	1.2	25	2.00	1.9	33	4.95	2300	300
15	6	Flexible	3.40	1.0	1.2	28	2.00	2.0	37	3.30	2900	300
15	10	Flexible	4.60	1.0	1.2	34	2.00	2.1	43	1.91	4000	300
16	1.5	Flexible	1.60	0.8	1.2	19.0	1.60	1.8	26	13.3	1300	300
16	2.5	Flexible	2.10	0.8	1.2	21	1.60	1.8	29	7.98	1600	300
16	4	Flexible	2.60	1.0	1.2	25	2.00	1.9	34	4.95	2300	300
16	6	Flexible	3.40	1.0	1.2	29	2.00	2.0	38	3.30	3000	300
16	10	Flexible	4.60	1.0	1.2	35	2.00	2.1	44	1.91	4100	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)
17	1.5	Flexible	1.60	0.8	1.2	20	1.60	1.8	27	13.3	1400	300
17	2.5	Flexible	2.10	0.8	1.2	22	2.00	1.8	31	7.98	1900	300
17	4	Flexible	2.60	1.0	1.2	27	2.00	1.9	35	4.95	2500	300
17	6	Flexible	3.40	1.0	1.2	31	2.00	2.1	40	3.30	3200	300
17	10	Flexible	4.60	1.0	1.2	37	2.50	2.2	47	1.91	4800	300
18	1.5	Flexible	1.60	0.8	1.2	20	1.60	1.8	27	13.3	1400	300
18	2.5	Flexible	2.10	0.8	1.2	22	2.00	1.8	31	7.98	1900	300
18	4	Flexible	2.60	1.0	1.2	27	2.00	1.9	35	4.95	2500	300
18	6	Flexible	3.40	1.0	1.2	31	2.00	2.1	40	3.30	3200	300
18	10	Flexible	4.60	1.0	1.2	37	2.50	2.2	47	1.91	4900	300
19	1.5	Flexible	1.60	0.8	1.2	20	1.60	1.8	27	13.3	1400	300
19	2.5	Flexible	2.10	0.8	1.2	22	2.00	1.8	31	7.98	1900	300
19	4	Flexible	2.60	1.0	1.2	27	2.00	1.9	35	4.95	2600	300
19	6	Flexible	3.40	1.0	1.2	31	2.00	2.1	40	3.30	3300	300
19	10	Flexible	4.60	1.0	1.2	37	2.50	2.2	47	1.91	5000	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)
20	1.5	Flexible	1.60	0.8	1.2	20	1.60	1.8	28	13.3	1400	300
20	2.5	Flexible	2.10	0.8	1.2	23	2.00	1.8	31	7.98	2000	300
20	4	Flexible	2.60	1.0	1.2	28	2.00	2.0	36	4.95	2700	300
20	6	Flexible	3.40	1.0	1.2	32	2.00	2.1	41	3.30	3400	300
21	1.5	Flexible	1.60	0.8	1.2	21	1.60	1.8	28	13.3	1500	300
21	2.5	Flexible	2.10	0.8	1.2	24	2.00	1.8	32	7.98	2100	300
21	4	Flexible	2.60	1.0	1.2	28	2.00	2.0	37	4.95	2800	300
21	6	Flexible	3.40	1.0	1.2	33	2.00	2.1	42	3.30	3500	300
22	1.5	Flexible	1.60	0.8	1.2	22	2.00	1.8	30	13.3	1800	300
22	2.5	Flexible	2.10	0.8	1.2	25	2.00	1.9	33	7.98	2200	300
22	4	Flexible	2.60	1.0	1.2	30	2.00	2.1	39	4.95	2900	300
22	6	Flexible	3.40	1.0	1.2	34	2.00	2.2	44	3.30	3800	300
23	1.5	Flexible	1.60	0.8	1.2	22	2.00	1.8	30	13.3	1800	300
23	2.5	Flexible	2.10	0.8	1.2	25	2.00	1.9	33	7.98	2200	300
23	4	Flexible	2.60	1.0	1.2	30	2.00	2.1	39	4.95	3000	300
23	6	Flexible	3.40	1.0	1.2	34	2.00	2.2	44	3.30	3800	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)
24	1.5	Flexible	1.60	0.8	1.2	23	2.00	1.8	32	13.3	1900	300
24	2.5	Flexible	2.10	0.8	1.2	26	2.00	1.9	35	7.98	2300	300
24	4	Flexible	2.60	1.0	1.2	32	2.00	2.1	41	4.95	3100	300
24	6	Flexible	3.40	1.0	1.2	36	2.50	2.2	47	3.30	4400	300
25	1.5	Flexible	1.60	0.8	1.2	23	2.00	1.8	32	13.3	1900	300
25	2.5	Flexible	2.10	0.8	1.2	26	2.00	1.9	35	7.98	2300	300
25	4	Flexible	2.60	1.0	1.2	32	2.00	2.1	41	4.95	3200	300
25	6	Flexible	3.40	1.0	1.2	36	2.50	2.2	47	3.30	4500	300
26	1.5	Flexible	1.60	0.8	1.2	23	2.00	1.8	32	13.3	1900	300
26	2.5	Flexible	2.10	0.8	1.2	26	2.00	1.9	35	7.98	2400	300
26	4	Flexible	2.60	1.0	1.2	32	2.00	2.1	41	4.95	3200	300
26	6	Flexible	3.40	1.0	1.2	36	2.50	2.2	47	3.30	4600	300
27	1.5	Flexible	1.60	0.8	1.2	24	2.00	1.8	32	13.3	2000	300
27	2.5	Flexible	2.10	0.8	1.2	27	2.00	1.9	36	7.98	2400	300
27	4	Flexible	2.60	1.0	1.2	32	2.00	2.1	41	4.95	3300	300
27	6	Flexible	3.40	1.0	1.2	37	2.50	2.3	48	3.30	4700	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)
28	1.5	Flexible	1.60	0.8	1.2	25	2.00	1.9	33	13.3	2100	300
28	2.5	Flexible	2.10	0.8	1.2	28	2.00	2.0	37	7.98	2600	300
28	4	Flexible	2.60	1.0	1.2	34	2.00	2.2	43	4.95	3500	300
29	1.5	Flexible	1.60	0.8	1.2	25	2.00	1.9	33	13.3	2100	300
29	2.5	Flexible	2.10	0.8	1.2	28	2.00	2.0	37	7.98	2600	300
29	4	Flexible	2.60	1.0	1.2	34	2.00	2.2	43	4.95	3500	300
30	1.5	Flexible	1.60	0.8	1.2	25	2.00	1.9	33	13.3	2100	300
30	2.5	Flexible	2.10	0.8	1.2	28	2.00	2.0	37	7.98	2600	300
30	4	Flexible	2.60	1.0	1.2	34	2.00	2.2	43	4.95	3600	300