

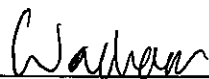
**SPECIFICATION****For****0.6/1KV-CVV-S**

0.6/1(1.2)kV PVC Insulated PVC Sheathed

Shielded Control Cable

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

BY



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CUSTOMER

Rev.	Date	Description
0	20/05/2020	Issued specification
1	17/02/2021	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 shielded control cable.

The cables shall be based on 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 mm<sup>2</sup> : The direction of lay shall be left-hand (S) lay.

For size 6 and 10 mm<sup>2</sup> : 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 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. 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.

## 6. Sheath

The sheath shall be sunlight resistant 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. Rated circuit voltage "0.6/1KV"
4. Type of insulation "PVC"
5. Type of cable " SHIELD 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

## 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 and IEC 60332-1.


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 "0.6/1KV-CVV-S"
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

#### **Definition concerning the tests**

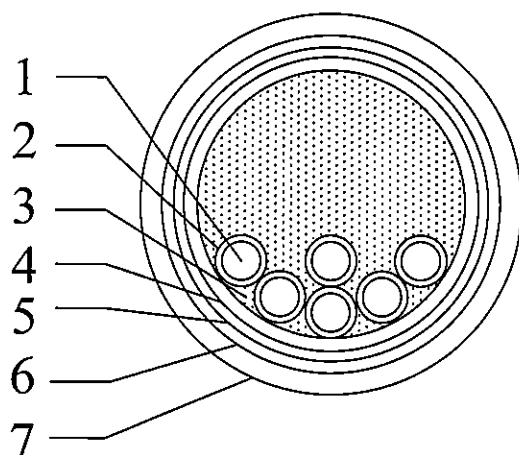
**Routine tests:** Tests made by the manufacturer on each manufactured length of cable to check that each length meets the specified requirements.

**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	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 <sup>2</sup> )	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	12.5	13.3	160	300
2	2.5	Flexible	2.10	0.8	1.8	13.5	7.98	200	300
2	4	Flexible	2.60	1.0	1.8	15.0	4.95	260	300
2	6	Flexible	3.40	1.0	1.8	16.5	3.30	340	300
2	10	Flexible	4.60	1.0	1.8	19.0	1.91	480	300
3	1.5	Flexible	1.60	0.8	1.8	12.5	13.3	180	300
3	2.5	Flexible	2.10	0.8	1.8	14.0	7.98	230	300
3	4	Flexible	2.60	1.0	1.8	15.5	4.95	320	300
3	6	Flexible	3.40	1.0	1.8	17.5	3.30	410	300
3	10	Flexible	4.60	1.0	1.8	20.0	1.91	600	300
4	1.5	Flexible	1.60	0.8	1.8	13.5	13.3	210	300
4	2.5	Flexible	2.10	0.8	1.8	15.0	7.98	270	300
4	4	Flexible	2.60	1.0	1.8	17.0	4.95	380	300
4	6	Flexible	3.40	1.0	1.8	19.0	3.30	500	300
4	10	Flexible	4.60	1.0	1.8	21.5	1.91	750	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	14.5	13.3	250	300
5	2.5	Flexible	2.10	0.8	1.8	16.0	7.98	330	300
5	4	Flexible	2.60	1.0	1.8	18.5	4.95	460	300
5	6	Flexible	3.40	1.0	1.8	20.5	3.30	660	300
5	10	Flexible	4.60	1.0	1.8	24.0	1.91	950	300
6	1.5	Flexible	1.60	0.8	1.8	15.5	13.3	290	300
6	2.5	Flexible	2.10	0.8	1.8	17.0	7.98	370	300
6	4	Flexible	2.60	1.0	1.8	20.0	4.95	550	300
6	6	Flexible	3.40	1.0	1.8	22.5	3.30	700	300
6	10	Flexible	4.60	1.0	1.8	26.0	1.91	1100	300
7	1.5	Flexible	1.60	0.8	1.8	15.5	13.3	300	300
7	2.5	Flexible	2.10	0.8	1.8	17.0	7.98	400	300
7	4	Flexible	2.60	1.0	1.8	20.0	4.95	550	300
7	6	Flexible	3.40	1.0	1.8	22.5	3.30	800	300
7	10	Flexible	4.60	1.0	1.8	26.0	1.91	1200	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	17.0	13.3	340	300
8	2.5	Flexible	2.10	0.8	1.8	18.5	7.98	450	300
8	4	Flexible	2.60	1.0	1.8	21.5	4.95	650	300
8	6	Flexible	3.40	1.0	1.8	24.0	3.30	900	300
8	10	Flexible	4.60	1.0	1.8	28.0	1.91	1400	300
9	1.5	Flexible	1.60	0.8	1.8	18.0	13.3	490	300
9	2.5	Flexible	2.10	0.8	1.8	19.5	7.98	500	300
9	4	Flexible	2.60	1.0	1.8	23.0	4.95	750	300
9	6	Flexible	3.40	1.0	1.8	26.0	3.30	1000	300
9	10	Flexible	4.60	1.0	1.8	30.0	1.91	1600	300
10	1.5	Flexible	1.60	0.8	1.8	19.0	13.3	430	300
10	2.5	Flexible	2.10	0.8	1.8	21.0	7.98	550	300
10	4	Flexible	2.60	1.0	1.8	24.5	4.95	850	300
10	6	Flexible	3.40	1.0	1.8	27.5	3.30	1200	300
10	10	Flexible	4.60	1.0	1.8	32.5	1.91	1700	300



**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	19.0	13.3	440	300
11	2.5	Flexible	2.10	0.8	1.8	21.0	7.98	600	300
11	4	Flexible	2.60	1.0	1.8	24.5	4.95	900	300
11	6	Flexible	3.40	1.0	1.8	27.5	3.30	1200	300
11	10	Flexible	4.60	1.0	1.8	32.5	1.91	1800	300
12	1.5	Flexible	1.60	0.8	1.8	19.5	13.3	470	300
12	2.5	Flexible	2.10	0.8	1.8	21.5	7.98	650	300
12	4	Flexible	2.60	1.0	1.8	25.5	4.95	950	300
12	6	Flexible	3.40	1.0	1.8	28.5	3.30	1300	300
12	10	Flexible	4.60	1.0	1.9	34.0	1.91	2000	300
13	1.5	Flexible	1.60	0.8	1.8	20.5	13.3	500	300
13	2.5	Flexible	2.10	0.8	1.8	22.5	7.98	700	300
13	4	Flexible	2.60	1.0	1.8	26.5	4.95	1000	300
13	6	Flexible	3.40	1.0	1.8	30.0	3.30	1400	300
13	10	Flexible	4.60	1.0	1.9	35.5	1.91	2200	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	20.5	13.3	500	300
14	2.5	Flexible	2.10	0.8	1.8	22.5	7.98	700	300
14	4	Flexible	2.60	1.0	1.8	26.5	4.95	1000	300
14	6	Flexible	3.40	1.0	1.8	30.0	3.30	1400	300
14	10	Flexible	4.60	1.0	1.9	35.5	1.91	2300	300
15	1.5	Flexible	1.60	0.8	1.8	21.0	13.3	550	300
15	2.5	Flexible	2.10	0.8	1.8	23.5	7.98	750	300
15	4	Flexible	2.60	1.0	1.8	27.5	4.95	1100	300
15	6	Flexible	3.40	1.0	1.8	31.0	3.30	1600	300
15	10	Flexible	4.60	1.0	2.0	37.0	1.91	2400	300
16	1.5	Flexible	1.60	0.8	1.8	21.5	13.3	550	300
16	2.5	Flexible	2.10	0.8	1.8	24.0	7.98	800	300
16	4	Flexible	2.60	1.0	1.8	28.0	4.95	1200	300
16	6	Flexible	3.40	1.0	1.8	32.0	3.30	1600	300
16	10	Flexible	4.60	1.0	2.0	38.0	1.91	2600	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	22.5	13.3	600	300
17	2.5	Flexible	2.10	0.8	1.8	25.0	7.98	850	300
17	4	Flexible	2.60	1.0	1.8	29.5	4.95	1300	300
17	6	Flexible	3.40	1.0	1.9	33.5	3.30	1800	300
17	10	Flexible	4.60	1.0	2.0	40.0	1.91	2800	300
18	1.5	Flexible	1.60	0.8	1.8	22.5	13.3	650	300
18	2.5	Flexible	2.10	0.8	1.8	25.0	7.98	850	300
18	4	Flexible	2.60	1.0	1.8	29.5	4.95	1300	300
18	6	Flexible	3.40	1.0	1.9	33.5	3.30	1800	300
18	10	Flexible	4.60	1.0	2.0	40.0	1.91	2800	300
19	1.5	Flexible	1.60	0.8	1.8	22.5	13.3	650	300
19	2.5	Flexible	2.10	0.8	1.8	25.0	7.98	900	300
19	4	Flexible	2.60	1.0	1.8	29.5	4.95	1300	300
19	6	Flexible	3.40	1.0	1.9	33.5	3.30	1900	300
19	10	Flexible	4.60	1.0	2.0	40.0	1.91	2900	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	23.0	13.3	700	300
20	2.5	Flexible	2.10	0.8	1.8	25.5	7.98	950	300
20	4	Flexible	2.60	1.0	1.9	30.5	4.95	1400	300
20	6	Flexible	3.40	1.0	2.0	35.0	3.30	2000	300
21	1.5	Flexible	1.60	0.8	1.8	23.5	13.3	700	300
21	2.5	Flexible	2.10	0.8	1.8	26.5	7.98	1000	300
21	4	Flexible	2.60	1.0	1.9	31.0	4.95	1500	300
21	6	Flexible	3.40	1.0	2.0	35.5	3.30	2100	300
22	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	750	300
22	2.5	Flexible	2.10	0.8	1.8	27.5	7.98	1000	300
22	4	Flexible	2.60	1.0	1.9	32.5	4.95	1600	300
22	6	Flexible	3.40	1.0	2.0	37.5	3.30	2200	300
23	1.5	Flexible	1.60	0.8	1.8	25.0	13.3	800	300
23	2.5	Flexible	2.10	0.8	1.8	27.5	7.98	1100	300
23	4	Flexible	2.60	1.0	1.9	32.5	4.95	1600	300
23	6	Flexible	3.40	1.0	2.0	37.5	3.30	2300	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	26.0	13.3	800	300
24	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1100	300
24	4	Flexible	2.60	1.0	2.0	34.5	4.95	1700	300
24	6	Flexible	3.40	1.0	2.1	39.5	3.30	2400	300
25	1.5	Flexible	1.60	0.8	1.8	26.0	13.3	850	300
25	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1200	300
25	4	Flexible	2.60	1.0	2.0	34.5	4.95	1700	300
25	6	Flexible	3.40	1.0	2.1	39.5	3.30	2500	300
26	1.5	Flexible	1.60	0.8	1.8	26.0	13.3	850	300
26	2.5	Flexible	2.10	0.8	1.8	29.0	7.98	1200	300
26	4	Flexible	2.60	1.0	2.0	34.5	4.95	1800	300
26	6	Flexible	3.40	1.0	2.1	39.5	3.30	2500	300
27	1.5	Flexible	1.60	0.8	1.8	26.5	13.3	900	300
27	2.5	Flexible	2.10	0.8	1.8	29.5	7.98	1200	300
27	4	Flexible	2.60	1.0	2.0	35.5	4.95	1800	300
27	6	Flexible	3.40	1.0	2.1	40.5	3.30	2600	300

**Table 1 (continued)**

No. of cores	Size (mm <sup>2</sup> )	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	27.5	13.3	950	300
28	2.5	Flexible	2.10	0.8	1.9	31.0	7.98	1300	300
28	4	Flexible	2.60	1.0	2.0	37.0	4.95	2000	300
29	1.5	Flexible	1.60	0.8	1.8	27.5	13.3	950	300
29	2.5	Flexible	2.10	0.8	1.8	30.5	7.98	1300	300
29	4	Flexible	2.60	1.0	2.0	37.0	4.95	2000	300
30	1.5	Flexible	1.60	0.8	1.8	27.5	13.3	950	300
30	2.5	Flexible	2.10	0.8	1.8	30.5	7.98	1300	300
30	4	Flexible	2.60	1.0	2.0	37.0	4.95	2000	300