

Doc. No TMCRS-16006

Issued Date July 25, 2017

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SPECIFICATION

Document Title :

Round Medium voltage Reeling Cable-Metal Screen

Type Designation :

TRDMRC-MS

Rated voltage :

3.6/6kV, 6/10kV

2	2017. 07. 25	Add to size	D. W. YOON	S. H. HEO	W. H. LEE
1	2017. 02. 07	Add to size	D. W. YOON	S. H. HEO	W. H. LEE
0	2016. 01. 26	First issue	D. W. YOON	S. H. HEO	W. H. LEE
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1. Scope

This specifications details rubber insulated and sheathed flexible cable of rated voltages up to 6/10kV.

2. Normative references

The following referenced documents are indispensable for the application of this document.

IEC 60228	Conductors of insulated cables
IEC 60332-1	Tests on electric cables under fire conditions - Part 1 : Test on a single vertical insulated wire or cable
IEC 60502-2	Power cables with extruded insulation and their accessories for rated voltage from 1kV up to 30kV - Part 2 : Cable for rated voltage of 6kV and 30kV
IEC 60811-1	Common test methods for insulating and sheathing materials of electric cables - Part 1 : Methods for general application - Section 1 : Measurement of thickness and overall dimensions - Section 2 : Thermal ageing methods
IEC 60811-2	- Section 4 : Tests at low temperature - Part 2 : Methods specific to elastomeric compounds - Section 1 : Ozone resistance test – Hot set test – Mineral oil immersion test
JCS 353	High-Voltage Ethylene-Propylene Rubber Insulated Polychloroprene Sheathed Flexible Cables

3. Cable designation

TRDMRC-MS : Travelling Round Medium voltage Reeling Cable-Metal Screen

4. Rated voltage

3.6/6kV, 6/10kV

5. Construction

5.1 Conductor

The conductors shall comply with the requirements given in IEC 60228 for class 5 conductors.

The wires may be tinned.

5.2 Insulation

The insulation shall be rubber compound of EPR to this specification applied around each conductor.

The thickness of insulation shall comply with the specified value given in IEC 60502-2.

5.3 Screen

Screen is consist of conductor screen and insulation screen.

Conductor screen shall be applied non-metallic semi-conducting tape.

Insulation screen shall be applied non-metallic semi-conducting tape and metallic layer.

A tape of suitable material may be applied.

5.4 Core identification

The insulated cores shall be black number on white insulation or color taping on insulation.

3C : Black, White, Red or 1, 2, 3

4C : Black, White, Red, Green or 1, 2, 3, 4

5.5 Sheath

The cores shall be covered with a sheath.

The thickness of sheath shall comply with the specified value given in IEC 60502-2.

The reinforced layer consisting of braiding by twisted thread of polyester shall be inserted in the middle of the sheath.

5.6 Overall diameter

The mean overall diameter shall be within the limits given in table 2, 3, 4.

6. Tests

Compliance with the requirements of 5 shall be checked by inspection and by the tests given in table 1.

Table 1. Tests for TRDMRC-MS

Tests	Category of test	Test method described in	
Resistance of conductors	R	IEC 60502-2	16.2
Partial discharge test	R	IEC 60502-2	16.3
Voltage test	R	IEC 60502-2	16.4
Conductor examination	S	IEC 60502-2	17.4
Check of dimensions _ external diameter	S	IEC 60502-2	17.8
Hot set test for insulation & sheath	S	IEC 60502-2	17.10

Note) Definitions concerning the tests

- R(routine tests / S(sample tests)

7. Marking on cable

The cable shall be marked with the following information through the length of cable.

7.1 Cable designation

7.2 Rated voltage

7.3 Number of cores x Conductor size

7.4 Manufacturer's name

7.5 Year of manufacture

7.6 Length marking per 1 meter

ex) TRDMRC-MS 6/10kV 4Cx25SQMM TMC 2017 0000M

8. Marking on drum

On a flange of drum, necessary information such as manufacture's name, cable type, size, rated voltage, length of cable etc. shall be printed or stucked an aluminum plate on the drum.

9. Packing

The completed cable shall be placed on the wooden drum in such a manner that it will be protected from damages during transportation. The both ends of the completed cable shall be sealed by cap.

Table 2. TRDMRC-MS

Rated voltage	Number of cores	Conductor		Overall diameter		Main conductor resistance (20°C) (max.)	Net weight (approx.)	Tensile stress (max.)
		nominal cross-section	diameter (approx.)	Min.	Max.			
kV	C	mm ²	mm	mm	mm	Ω/km	kg/km	N
3.6/6	1	16	5.6	19.2	21.4	1.24	590	240
	1	25	7.0	21.0	23.3	0.795	740	375
	1	35	8.2	22.3	24.7	0.565	880	525
	1	50	9.9	24.0	26.5	0.393	1,080	750
	1	70	11.8	27.3	30.0	0.277	1,430	1,050
	1	95	13.5	29.3	32.1	0.210	1,720	1,425
	1	120	15.3	31.2	34.2	0.164	2,040	1,800
	1	150	17.1	33.4	36.5	0.132	2,410	2,250
	1	185	18.6	36.0	39.2	0.108	2,860	2,775
	1	240	21.3	39.0	42.4	0.0817	3,530	3,600
6/10	1	16	5.6	23.7	26.2	1.24	830	240
	1	25	7.0	25.5	28.1	0.795	990	375
	1	35	8.2	26.7	29.4	0.565	1,130	525
	1	50	9.9	28.7	31.5	0.393	1,380	750
	1	70	11.8	30.8	33.7	0.277	1,670	1,050
	1	95	13.5	32.6	35.6	0.210	1,960	1,425
	1	120	15.3	34.5	37.7	0.164	2,300	1,800
	1	150	17.1	36.5	39.8	0.132	2,670	2,250
	1	185	18.6	38.1	41.5	0.108	3,050	2,775
	1	240	21.3	42.6	46.3	0.0817	3,890	3,600

※ Cable construction

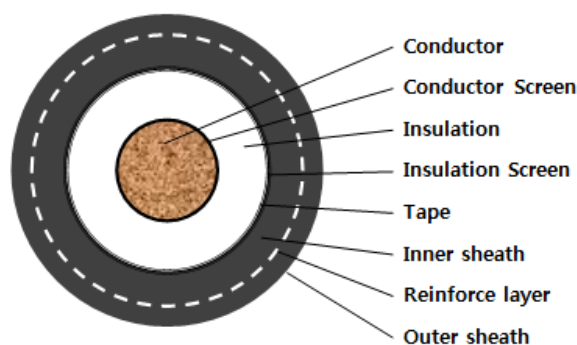


Table 3. TRDMRC-MS

Rated voltage	Number of cores	Conductor		Overall diameter		Main conductor resistance (20°C) (max.)	Net weight (approx.)	Tensile stress (max.)
		nominal cross-section	diameter (approx.)	Min.	Max.			
kV	C	mm ²	mm	mm	mm	Ω/km	kg/km	N
3.6/6	3	16	5.6	36.7	40.0	1.24	1,950	720
	3	25	7.0	40.0	43.5	0.795	2,430	1,125
	3	35	8.2	42.9	46.6	0.565	2,920	1,575
	3	50	9.9	46.9	50.8	0.393	3,670	2,250
	3	70	11.8	54.0	58.4	0.277	4,950	3,150
	3	95	13.5	58.0	62.6	0.210	5,950	4,275
	3	120	15.3	62.4	67.3	0.164	7,110	5,400
	3	150	17.1	66.5	71.6	0.132	8,350	6,750
	3	185	18.6	72.5	78.0	0.108	10,030	8,325
	3	240	21.3	78.9	84.8	0.0817	12,400	10,800
	4	16	5.6	40.0	43.5	0.0817	2,590	960
6/10	3	16	5.6	46.2	50.1	1.24	2,870	2,870
	3	25	7.0	49.7	53.8	0.795	3,440	1,125
	3	35	8.2	52.4	56.7	0.565	3,970	1,575
	3	50	9.9	56.6	61.1	0.393	4,830	2,250
	3	70	11.8	60.9	65.7	0.277	5,870	3,150
	3	95	13.5	65.0	70.1	0.210	6,940	4,275
	3	120	15.3	69.2	74.5	0.164	8,140	5,400
	3	150	17.1	73.5	79.1	0.132	9,490	6,750
	3	185	18.6	77.0	82.8	0.108	10,820	8,325
	3	240	21.3	86.9	93.3	0.0817	13,930	10,800

※ Cable construction

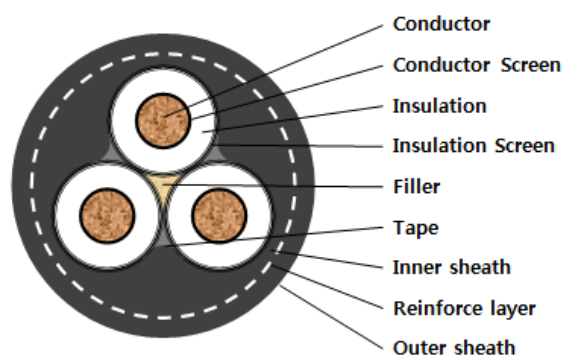


Table 4. TRDMRC-MS

Rated voltage	Number of cores	Conductor		Overall diameter		Main conductor resistance (20°C) (max.)	Net weight (approx.)	Tensile stress (max.)
		nominal cross-section	diameter (approx.)	Min.	Max.			
kV	C	mm ²	mm	mm	mm	Ω/km	kg/km	N
3.6/6	4	16	5.6	40.5	44.1	1.24	2,420	960
	4	25	7.0	44.2	48.0	0.795	3,030	1,500
	4	35	8.2	47.4	51.4	0.565	3,640	2,100
	4	50	9.9	52.0	56.2	0.393	4,620	3,000
	4	70	11.8	59.9	64.7	0.277	6,250	4,200
	4	95	13.5	64.5	69.5	0.210	7,550	5,700
	4	120	15.3	69.1	74.5	0.164	9,000	7,200
	4	150	17.1	73.9	79.5	0.132	10,630	9,000
	4	185	18.6	80.8	86.8	0.108	12,820	11,100
6/10	4	16	5.6	51.3	55.5	1.24	3,570	960
	4	25	7.0	55.2	59.6	0.795	4,300	1,500
	4	35	8.2	58.4	63.0	0.565	5,000	2,100
	4	50	9.9	62.9	67.9	0.393	6,080	3,000
	4	70	11.8	68.0	73.2	0.277	7,450	4,200
	4	95	13.5	72.5	78.1	0.210	8,820	5,700
	4	120	15.3	77.1	82.9	0.164	10,350	7,200
	4	150	17.1	82.0	88.1	0.132	12,090	9,000

※ Cable construction

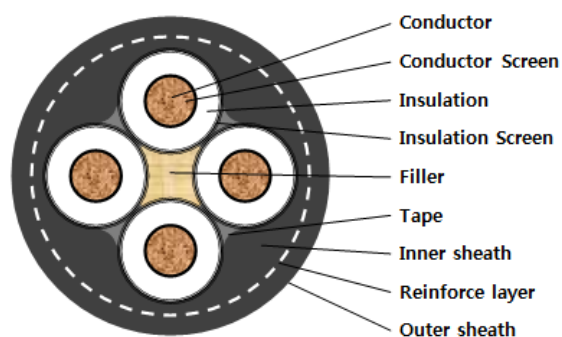


Table 5. Cable characteristics

Electrical Properties	Test voltage	3.6/6kV) 12.5kV/5min. 6/10kV) 21kV/5min.
Thermal Properties	Surface temperature	Mobile operation) -25°C ~ 60°C Fixed installation) -40°C ~ 75°C
	Max. conductor temperature	
	- normal operation - short-circuit at 5s	90°C 250°C
Mechanical Properties	Application	Reeling cable for crane
	Tensile stress, max.	According to table 2, 3
	Torsion stress, max.	±30deg/m
	Bending radius, min.	12 x Cable diameter
	Festoon speed, max.	60m/min.
Chemical properties	Oil resistant	IEC 60811-2-1, 10
	Flame test	IEC 60332-1
	For outdoor applications	Moisture, UV and ozone resistance

Specification Revision Record

No.	Date	Contents
1	2017. 02. 07	- Add to Size . 6/10kV TRDMRC-MS 240SQx3C
1	2017. 07. 25	- Add to Size . 3.6/6kV & 6/10kV TRDMRC-MS 1C