

Coaxial Cable SPD

Type **TVA-03C**

Hardware Specifications

(Document No. SE21-410-003-00)

IMPORTANT NOTICE

No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose without the express written permission of the publisher, FURUNO ELECTRIC CO., LTD.
FURUNO ELECTRIC CO., LTD. All rights reserved.

Any information of this documentation shall not be disclosed to any third party without permission of the publisher, FURUNO ELECTRIC CO., LTD.

FURUNO ELECTRIC CO., LTD. reserves the right to make changes to its products and specifications without notice.

All brand and product names are registered trademarks, trademarks or service marks of their respective holders.

Revision History

Version	Contents	Date
0	First release	2021.08.20

Table of contents

1	Outline	1
2	Hardware Specifications	1
2.1	Environmental Specifications.....	1
2.2	Electrical Specifications	1
3	Outline drawing	2
4	Circuit diagram.....	2
5	Package	3
6	Marking	4
7	Drip-proof treatment of connector part	5
8	Shipping inspection	6
9	Warranty.....	6
10	Failure rate	6
11	Special notes	6

1 Outline

This document describes the specifications of coaxial cable SPD TVA-03C.

2 Hardware Specifications

2.1 Environmental Specifications

Items	Specifications
Installation category	Outdoor, Indoor (*1)
Operation temperature/ Storage temperature	-40 to +80°C
Operation humidity/ Storage humidity	5 to 96%RH (No condensation)
Connector type	N type (J), N type (P)
Recommended connector tightening torque (N type)	2.5 to 5.0 N·m
Recommended ground terminal tightening torque (M type)	1.5 to 1.6 N·m
Water proof	IEC 60529:2001 (JIS C 0290:2003) Equivalent to protection class (IPX5) by the outer shell of the electromechanical base (*1)
Vibration proof	JIS Z 0200:2013 Equivalent to random vibration test Level 1
Impact proof	JIS C 60068:2-27 Table A.2 Equivalent to testing parts used in non-portable products

(*1) Only when the connector part is drip-proofed

2.2 Electrical Specifications

Items	Specifications
Insulation resistance $U_c=6.0\text{VDC}$ charged	1 k Ω or more
Maximum allowable power	50 W
Characteristic impedance	50 Ω
Frequency band	100 kHz to 3.0 GHz
Insertion loss (within frequency band)	0.2dB or less
VSWR (within frequency band)	1.2 or less

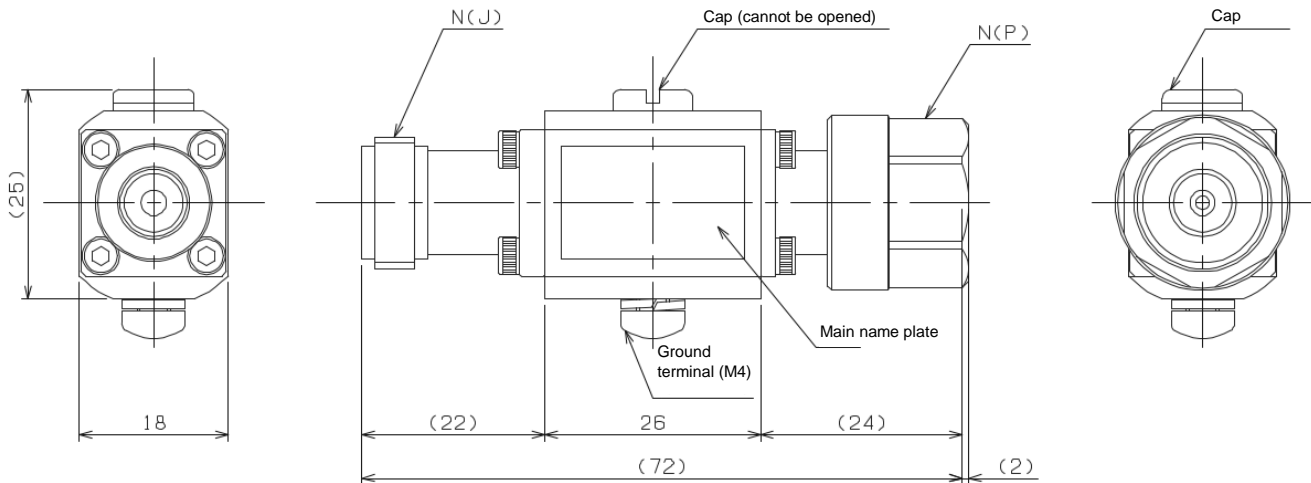
JIS C 5381-21 (IEC 61643-21)

Items	Specifications
IEC category	C2, D1
Maximum continuous working voltage (U_c)	100 VDC
Voltage protection level of open circuit voltage: 10KV (1.2/ 50 μs)、 Short circuit current: 5kA (8/20 μs) (Positive and negative each 5 times)	800V or less
AC durability	60Hz 0.5A 1sec 5 times
Impulse durability (Category C2) (*2) Open circuit voltage: 40kV (1.2/50 μs)、 Short circuit voltage: 20kA (8/20 μs) (Positive and negative each 5 times)	20kA
Impulse durability (Category D1) Open circuit voltage: 1.0kV or more Short circuit voltage: 2.5kA (10/350 μs) ((Positive and negative each 1 times)	5.0kA
Overload failure mode	mode2 (*3)

(*2) JIS C 5381 21 Extended value

(*3) mode2: A state in which the voltage limiting part is short-circuited due to a very low impedance inside the SPD.

3 Outline drawing



Dimensions without tolerances in accordance with JIS B0405-1991-m.

Material

Parts name	Material	Surface treatment
Contact	BeCuB	Au
	PBB	Au
Body	BsBM	CSZ
Hexagon socket set screw	BsBM	CSZ
Insulator	PTFE	
O ring	Silicon rubber	-
Sems screw	SUS	-
Main name plate	PET	-

Weight about 110g

4 Circuit diagram

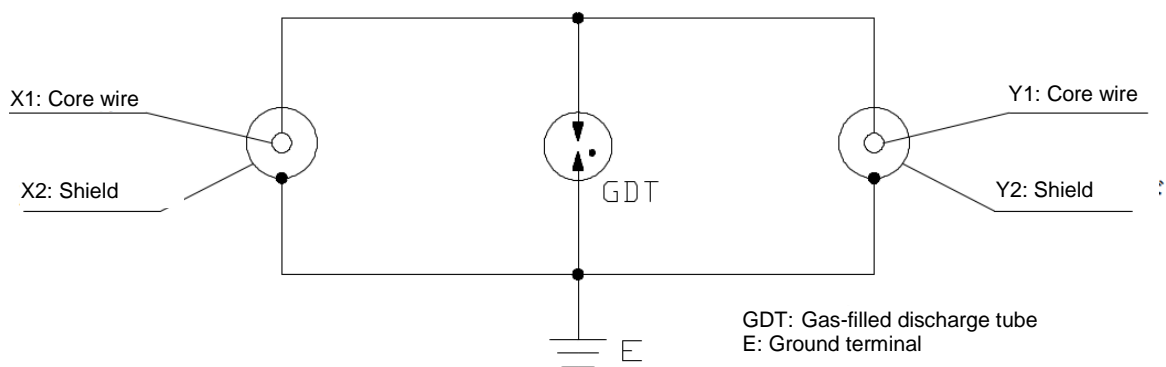


Figure 4.1 Circuit diagram

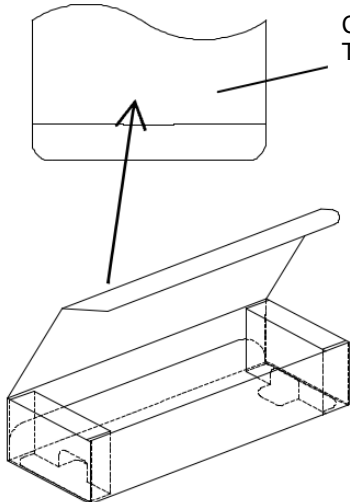
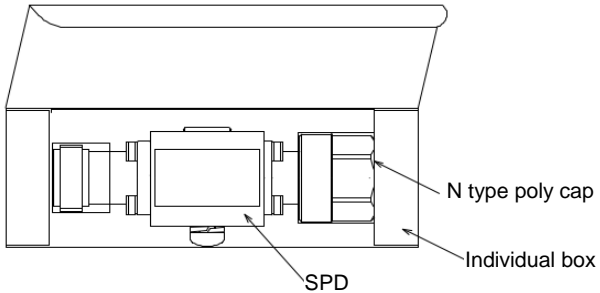
5 Package

Packing configuration

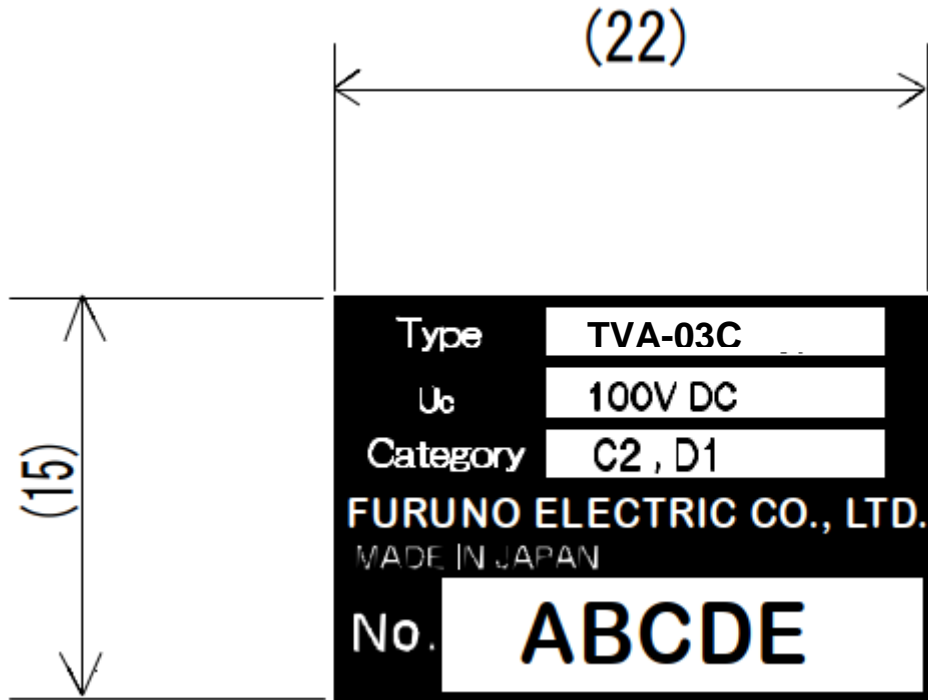
Configuration	Quantity
SPD	1
PE bag	1
N type poly cap	2
Individual box	1

Individual package specifications

Attached N-type poly caps to the two parts of the SPD connector, put it in a PE bag, and individually wrap it in a special individual packaging box.

Individual box type (display)	Packaging in individual packaging box
 <p>Coaxial cable SPD TVA-03C</p>	 <p>N type poly cap SPD Individual box</p>

6 Marking



The base is silver color
The value in brackets is a reference dimension.

Lot number

The lot number is printed at a predetermined position on the main name plate.

The lot number structure is "ABCDE".

A: Classification for internal management,

BC: Last two digits of the Christian era,

D: Production month (January to September: 1 to 9, October: X, November: Y, December: Z)

E: Serial number for each production model in the production month (alphabet display)

7 Drip-proof treatment of connector part

For drip-proof treatment of the connector, wrap both the plug side and the jack side.

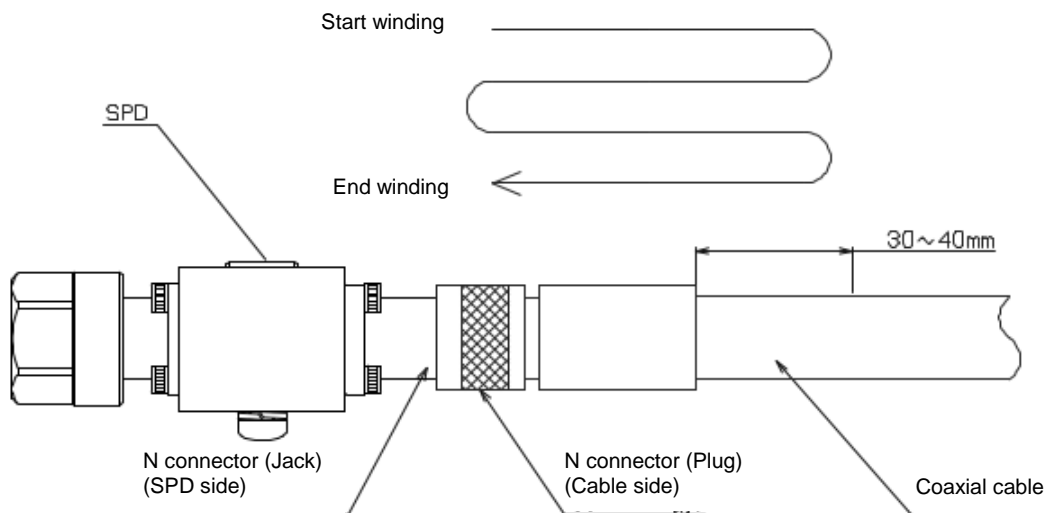
(1) Cleaning

Remove oil, water droplets, dust, etc. from the taping area.

(2) Wrapping self-bonding tape

While stretching the tape width from the base of the connector on the SPD side to about 3/4, wrap it two or more times toward the cable side so that about half of the tape width overlaps and there is no gap. At that time, also wrap the coaxial cable part by 30 to 40 mm.

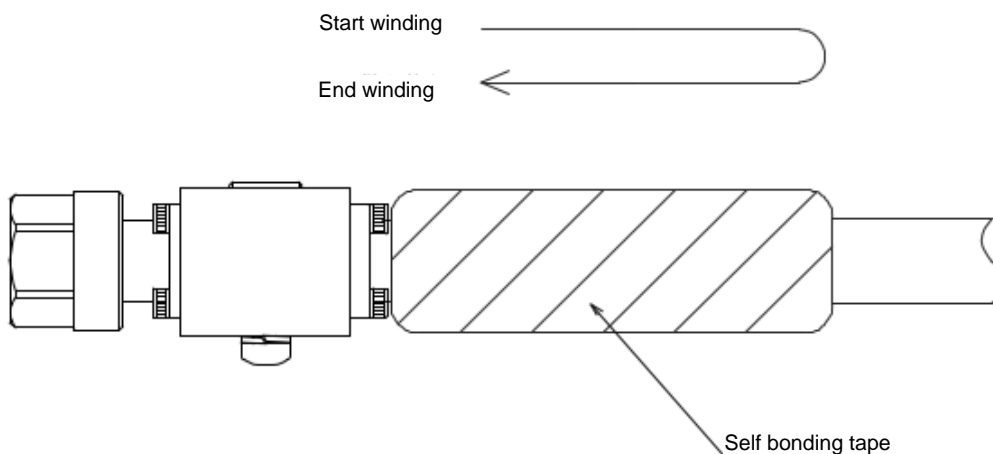
For self-bonding tape, use the equivalent of "F-CO TAPE NO. 1" manufactured by Furukawa Denki Kogyo Co., Ltd.



(3) Wrapping weather resistant vinyl tape

Wrap the vinyl tape one or more round trips over the self-bonding tape without any gaps. The winding direction should be opposite to the direction of the self-bonding tape.

For vinyl tape, use the equivalent of Vinyl tape for electrical insulation "No.22" manufactured by Nitto Denko Corporation.



8 Shipping inspection

Items	Method
Visual inspection	Inspect by visual touch. There should be no significant scratches, dirt, or damage on the surface.
Operation start voltage	Measure with a dedicated measuring instrument.
Insertion loss measurement	Measure the insertion loss from 100kHz to 3.0GHz with a network analyzer, and it should be 0.2 or less.
VSWR measurement	Measure VSWR from 100kHz to 3.0GHz with a network analyzer and it should be 1.2 or less.

9 Warranty

One-year warranty after the product is delivered.

10 Failure rate

184.8FIT

MTBF: 5.41×10^6 (H)

11 Special notes

This product is RoHS compliant.