1. General

This SPD(Surge Protective Device) is suitable for a.c. power line, this SPD is intended use of protect from abnormal voltage such as indirect lightning surge.

The composition of this SPD consists of a plug, a base and a sensor.

Designed for replacing only a plug part if SPD become failure and lightning surge detection feature which indicates the SPD operation count and recommended replacement.

Between neutral conductor N of TT or TN system, and protective conductor PE consist of GDT (Gas Discharge Tube) only.

2. Service Condition

2.1 Install Location : Indoor
2.2 Ambient Temperature : -25℃~+60℃
2.3 Relative Humidity : ≤95%(non-condensing)
2.4 Storage Temperature : -40℃~+70℃
2.5 Storage Humidity : ≤95%(non-condensing)
2.6 Altitude : ≤2000m

3. Appearance, Dimensions and Marking

3.1 Appearance and Dimensions.

Table.1

Model Number	Product Configuration	Appearance
SMBP-MZSR	Smart SPD sensor	T-130370A03
SMBP-MZSR400JK1AR	Smart SPD(SMBP)	T-140620A24
SMBP-MZSR400JK2AR	Smart SPD(SMBP)	T-140620A25
SMBP-MZSR400JK3AR	Smart SPD(SMBP)	T-140620A26

3.2 Marking

Following particulars are marked on the body of this product;

(1)Manufacture's name or trademark
(2)Maximum continuous operation voltage U_c
(3)Type of current(~)
(4)Test classification and discharge parameter (I_n,I_{max})
(5)Voltage protection level U_p
(6)Degree of protection(IP code)
(7)Identification of terminals (Base)
(8)Max. mains-side overcurrent protection
(9)Type

4. Characteristics

4.1 SPD characteristics shown in Table.2

Table.2

Item		Measurement condition	Characteristics		
1.Model Number			SMBP-MZSR		
			400JK1AR	400JK2AR	400JK3AR
2.Complies with standard			IEC 61643-11:2011		
3.Test classification			Class II		
4.Nominal Voltage U_N			Single phase two-wire	Single phase two-wire, Three phase three-wire	Three phase three-wire, Three phase four-wire
			400,480V	230 / 400V 277 / 480V	230 / 400V 277 / 480V
5.Maximum continuous operation voltage U_c		L-N / N-PE	500 / 275V (50/60Hz)		
6.Nominal discharge current I_n		8 / 20μs	20kA		
7.Maximum discharge current I_{max}		8 / 20μs	40kA		
8.Voltage protection level U_p		L-N / N-PE	≤2.5kV / ≤1.5kV		
9.Voltage protection level (5kA) U_P		L-N / N-PE	≤1.8kV / -		
10.Overcurrent protection			≤125A gG(Fuse)		
11.Short-circuit current rating I_{SCCR}			25kA (50/60Hz)[N3]		
12. Current interruption rating		L-N / N-PE	- / 100A 50/60Hz)		
13.Temporary overvoltage U_T		L-N / N-PE	580V 5s / 1200V 200ms (50/60Hz)		
14.Leakage current I_{PE}		AC500/275V (L-N / N-PE)	≤1mA		
15.Response speed T_A			≤3ns		
16.Dielectric withstanding voltage(only base)		L/N-PE	1.2/50μs 10kV		
17.Number of ports			1port		
18.Location			In door		
19.Mounting method			35mm DIN rail		
20.Degree of protection			IP20		
21.Identification of terminals			L,N,PE		
22.Fault indicator		operating state / fault indication	Green/Red		
23.Remote contact[N4]	Normal	11-12	Short		
		11-14	Open		
	Fault	11-12	Open		
		11-14	Short		
	Maximum operation voltage / current		UL:AC125V / 1.5A (Max:AC250V / 1.5A)		

Note 1) Test Conditions

Temperature 20±15°C, Humidity 65±20% (IEC 160-1963 (normal condition of test place)).

Note 2) Do not use "L-PE" voltage more than U_C.

Note 3) Including external disconnector.

Note 4) Characteristics are defined in state where a base and a plug are connected.

4.2 Sensor characteristics shown in Table.3

Table.3

Item		Characteristics			Information
1.Minimum detection surge current		・±200A			8/20μs
2.Maximum surge current		・±40kA			8/20μs
3.Switch operation	Press once	・SPD operation count : 00~99 ・Battery level alarm : bt[N2]			7 segment display
		・Recommended replacement display			Normal: OFF When replacement is recommended: ON
	Press and hold (≥5sec)	Data erasing	・SPD operation count	:CL	After data erasing : 00
			・Recommended replacement display		After data erasing : OFF
4.Battery		・Battery life:7years(CR1632,3V)			Replaceable

Note 1) Test Conditions

Temperature 20±15°C, Humidity 65±20% (IEC 160-1963 (normal condition of test place)).

5. Connection cable

5.1 Cable size : cross-section 1.6~22mm^2 (AWG15~4)[N1]

Cable stripping length : about 15mm(Figure.1)

Recommended tightening torque :1.47~1.96N・m(15~20kgf・cm)

Crimp-type terminal connection port : M5 Y-type crimp-type terminal (Width<12mm, Thickness≤1mm)[N2]

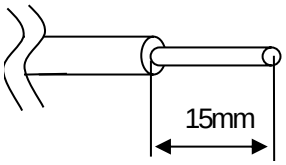


Figure.1

5.2 Remote contact

Cable size : cross-section 0.05~2mm^2 (AWG30~14)

Cable stripping length : 7~8mm

Note1)One cable: ≤22mm^2 , Two cables total : <22mm^2

Note2)One cable only

6. Inspection Condition

The inspection of electrical characteristics, mechanical characteristics and appearance shall be held as following Table.4

Table.4

Item	Inspection type	How to check for Characteristics
1.Varistor voltage (V_{1mA})	Sampling	L-N : 819~1001V
2. DC spark-over voltage	Sampling	N-PE : ≥480V
3.Table 2:5~14	Type	According to IEC 61643-11:2011
4.Remote contact	Type	According to Table.2
5.SPD operation count	Type	Confirm count indication operates after Impulse is applied.
6.Recommended replacement display	Sampling	LED check switch: Press once Install a plug: Defect LED OFF Except a plug: Defect LED ON
7.Data erasing	Sampling	LED check switch: Press and hold(≥5sec) 7 segment display: CL (operation count 00)
8.Battery level alarm	Type	Check the display when voltage is reduced less than 2.5V from 3V. LED check switch: Press once. 7 segment display: bt
9.Low temperature test	Type	After Table.5 test V_{1mA}: According Table.4 I_{PE}: According Table.1 Defect LED: According Table.4 7 segment display: 00
10.High temperature test	Type	
11.High temperature-humidity test	Type	
12.Temperature cycle test	Type	
13.Vibration test	Type	
14.Appearance, display	Sampling	According to Table.1
15.Dimension		

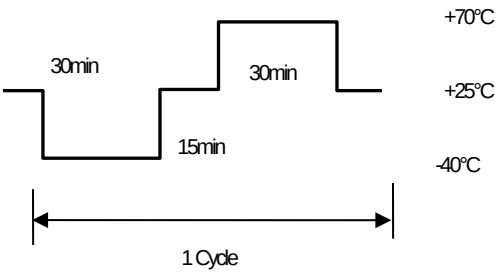
Note 1) Sampling Inspection; Single sampling plan, Normal inspection, Special inspection levels S-3 based ISO-2859 and AQL=2.5

Note 2) "Type inspection; This inspection is executed when the main material is changed.

7. Environmental Test

Table.5 shows the environmental test condition of this product.

Table.5

Item	Test Condition	Test Time
1.Low temperature test	Ta=-40±3℃	1000h
2.High temperature test	Ta=+70±2℃	1000h
3.High temperature-humidity test	Ta=+40±2℃ 90~96%	4days
4.Temperature cycle test		30 cycles
5.Vibration test	Frequency:40(Hz) Sweep rate:19.6m / s^2(2G)	15min / 3axis

8. Packing and Marking of Wrapping Box

8.1 Packing

Packaging unit 1 pieces packed in a box.

8.2 Marking of wrapping box

Following particulars are marking on wrapping box.

(1) Product Name (2) Manufacturer's name (3) Quantity (4) Date of manufacture (5)Lot No (6)RoHS

(6) Test classification

9. Quality guarantee period

The warranty period of this product has been one year since the product was delivered.

If defective product claims are found to be justifiable, replacement products meeting the applicable specification will be provided.

10. Environmental correspondence

This product is applicable to EU RoHS Directive(*) for regulated substances (10 substances: lead, mercury, cadmium, hexavalent chromium, PBB, PBDE, DEHP, BBP, DBP, DIBP), and does not include controlled substances that exceed regulatory limits. * European Parliament and Council Directive 2011/65 / EU, 2016/863 / EU

11. Caution

Please use in combination with fuse or breaker to avoid short fault by hitting AC overload voltage.