

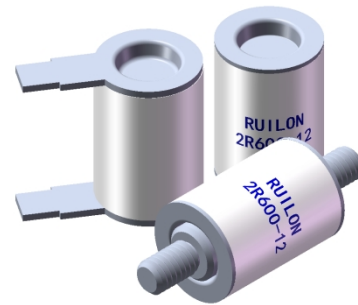
## Gas Discharge Tubes (GDT)

## RLH-1218 Series

### Description

The Gas Discharge Tube (GDT) is a protective device which is filled with certain proportion of noble gas, or mixed gas or other discharge media in the space between metal electrodes and metalized ceramics, and then sealed at high temperature to form a single gap or multi-gap switch type protective device. When the protected circuit or equipment suffers to surge, GDT will change from high impedance state to low impedance state and release the surge energy to reduce the residual voltage of the circuit, and then protect the equipment or human body from the hazard of transient overvoltage.

RL-1218 Series gas discharge tubes enable protection modules to be constructed with protection classes for N-PE applications.



### Agency Approvals

Agency	Standards	Certificate No.
	UL1449	E479668

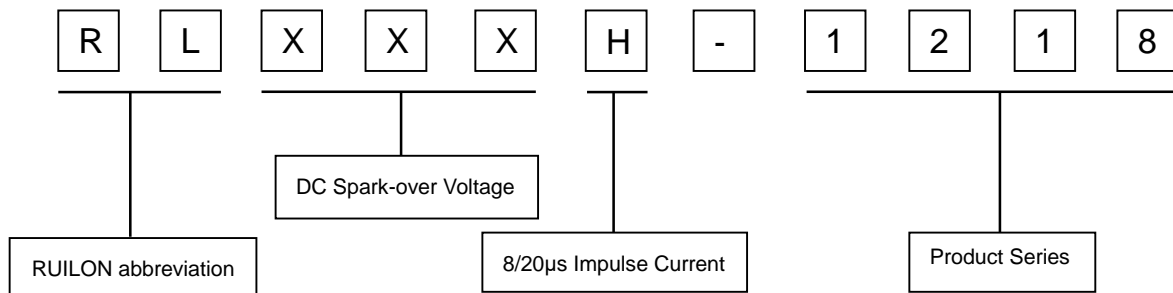
### Features

- I Stable performance over life
- I Very fast response time
- I High insulation resistance
- I Non-Radioactive

### Applications

- I AC power line N-PE application
- I Class I and class II – surge protection


### Part Number Code



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### Electrical Characteristics

Model	RL470H-1218	RL600H-1218	RL800H-1218	Units
<b>DC Spark-over Voltage</b> <sup>1) 2)</sup> at 100V/S	376~564	540~780	640~960	V
<b>Impulse Spark-over Voltage</b> at 1KV/ $\mu$ S	<900	<1000	<1200	V
<b>Front of wave spark-over voltage</b> at 1.2/50 $\mu$ s, 6 kV	<1100	<1300	<1500	V
<b>Class I (according to IEC 61643-11)</b>				
Maximum continuous operating voltage at 50/60Hz $U_C$	175	255	275	Vrms
Nominal impulse discharge current 8/20 $\mu$ s 15 times $I_n$	20	20	20	KA
Impulse discharge current 10/350 $\mu$ s 5 times $I_{imp}$	12.5	12.5	12.5	KA
Follow current at 50/60Hz $I_f$	100	100	100	A
<b>Class II (according to IEC 61643-11)</b>				
Maximum continuous operating voltage at 50/60Hz $U_C$	175	255	275	Vrms
Nominal impulse discharge current 8/20 $\mu$ s 15 times $I_n$	20	20	20	KA
Maximum discharge current 8/20 $\mu$ s 2 times $I_{max}$	40	40	40	KA
Follow current at 50/60Hz $I_f$	100	100	100	A
<b>AC discharge current (TOV <sup>3)</sup> at 1200V)</b> 1 time 50 Hz, 0.2 s	300	300	300	A
<b>Breakdown time</b>	<100	<100	<100	ns
- typical values	<40	<40	<40	ns
<b>Insulation Resistance</b> at DC 100V	>1	>1	>1	G $\Omega$
<b>Capacitance</b> at 1MHz	<5	<5	<5	pF
<b>Weight</b>				
RL-1218(K1)	~2.60	~2.60	~2.60	g
RL-1218(K2)	~2.85	~2.85	~2.85	g
RL-1218(K3)	~3.50	~3.50	~3.50	g
<b>Operation and storage temperature</b>	-40~+125	-40~+125	-40~+125	$^{\circ}$ C
<b>Climatic category (IEC60068-1)</b>	40/125/21	40/125/21	40/125/21	
<b>Agency Approvals</b> UL1449 (E479668) 	⊙	⊙	⊙	
<b>Marking, blue positive</b>	<b>RUILON</b> <b>2R470-12</b>	<b>RUILON</b> <b>2R600-12</b>	<b>RUILON</b> <b>2R800-12</b>	
<b>Surface treatment</b>	Matte-tin plated			

<sup>1)</sup> At delivery AQL 0.65 level II, DIN ISO 2859.

<sup>2)</sup> In ionized mode.

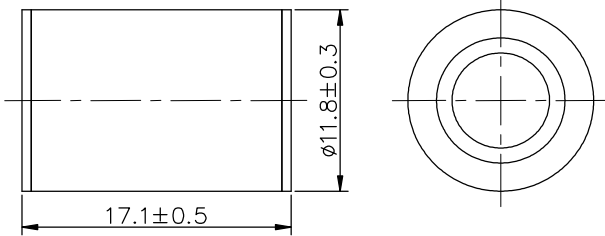
<sup>3)</sup> TOV - Temporary over voltage.

## Gas Discharge Tubes (GDT)

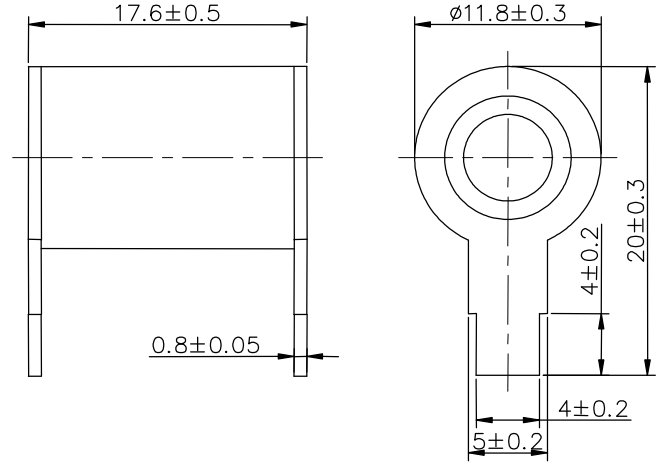
## RLH-1218 Series

### Dimensions (Unit: mm)

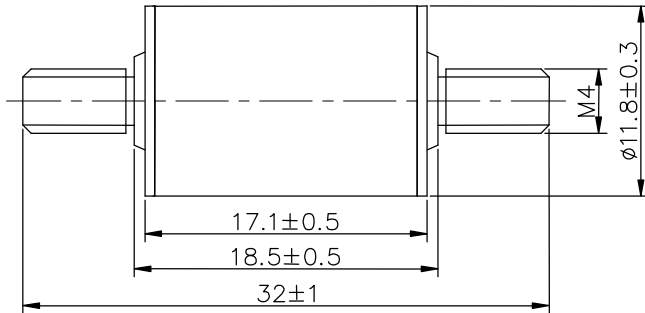
**RL-1218 (K1)**



**RL-1218 (K2)**



**RL-1218 (K3)**



### Terms and definitions

NO.	Item	Definitions
1	<b>Gas discharge tube(GDT)</b>	Gap, or several gaps, in an enclosed discharge medium, other than air at atmospheric pressure, designed to protect apparatus or personnel, or both, from high transient voltages. Also referred to as "gas tube surge arrester".
2	<b>DC Spark-over Voltage</b>	The voltage at which the gas discharge tube sparks over with slowly increasing d.c. voltage.
3	<b>Impulse Spark-over Voltage</b>	The highest voltage which appears across the terminals of a gas discharge tube in the period between the application of an impulse of given wave-shape and the time when current begins to flow.
4	<b>Impulse discharge current 8/20µs</b>	Current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20 µs.
5	<b>Impulse discharge</b>	Current impulse with a nominal virtual front time of 10 µs and a nominal time to half-value of 350 µs.

## Gas Discharge Tubes (GDT)

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	<b>current 10/350<math>\mu</math>s</b>	
6	<b>1,2/50 voltage impulse</b>	Voltage impulse with a nominal virtual front time of 1,2 $\mu$ s and a nominal time to half-value of 50 $\mu$ s.
7	<b>Maximum continuous operating voltage <math>U_c</math></b>	Maximum r.m.s. voltage, which may be continuously applied to the GDT's mode of protection.
8	<b>Nominal discharge current <math>I_n</math></b>	Crest value of the current through the GDT having a current waveshape of 8/20.
9	<b>Maximum discharge current <math>I_{max}</math></b>	Crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. $I_{max}$ is equal to or greater than $I_n$ .
10	<b>Impulse discharge current for class I test <math>I_{imp}</math></b>	Crest value of a discharge current through the SPD with specified charge transfer Q and specified energy W/R in the specified time.
11	<b>Follow current <math>I_f</math></b>	Peak current supplied by the electrical power system and flowing through the SPD after a discharge current impulse.
12	<b>Insulation Resistance</b>	Insulation resistance shall be measured from each terminal to every other terminal of the GDT. The test is performed with DC50V when normal spark-over Voltage 70~150V, others with DC100V.
13	<b>Capacitance</b>	The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified.
14	<b>Class I tests</b>	Tests carried out with the impulse discharge current $I_{imp}$ , with an 8/20 current impulse with a crest value equal to the crest value of $I_{imp}$ , and with a 1,2/50 voltage impulse.
15	<b>Class II tests</b>	Tests carried out with the nominal discharge current $I_n$ , and the 1,2/50 voltage impulse.

### Cautions and warnings

- I Surge arresters must not be operated directly in power supply networks.
- I Surge arresters may become hot in case of longer periods of current stress (danger of burning).
- I If the contacts of the surge arresters are defective, current stress can lead to the formation of sparks and loud noises.
- I Surge arresters may be used only within their specified values. In case of overload, the head contacts may fail or the component may be destroyed.
- I Damaged surge arresters must not be re-used.