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**SELECTION GUIDE**

LBGS8000-EX Range  
Surge Protective Isolated Barrier



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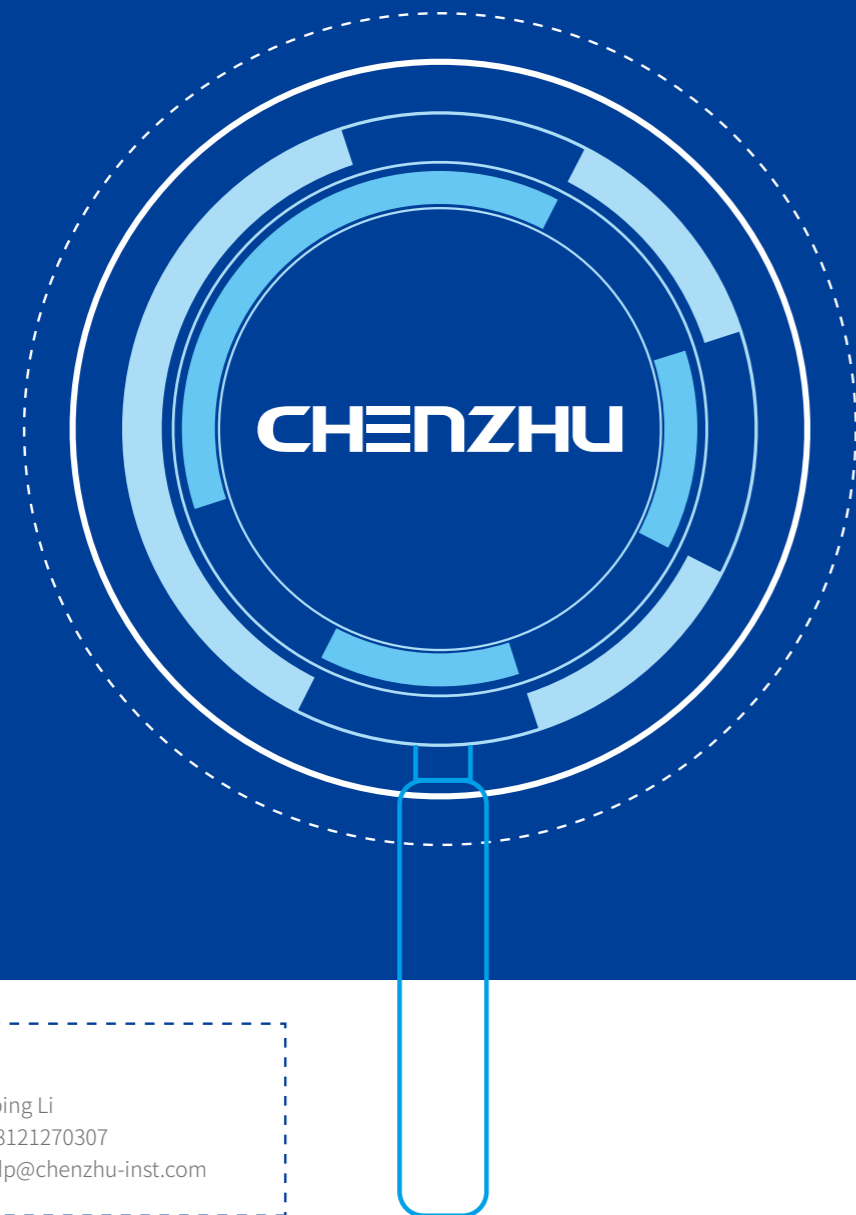
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# Looking for Agent !

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we will be your strong backup.



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## CHENZHU COMPANY OVERVIEW



Shanghai Chenzhu Instrument Co., Ltd. was founded in April, 2002, who was originated from Shanghai Institute of Process Automation Instrumentation. CHENZHU is a professional company with core expertise of R&D, manufacturing and sale service of high quality safety products, such as isolated barriers, signal conditioners, surge protective devices, safety relays etc.



## R&D Strength

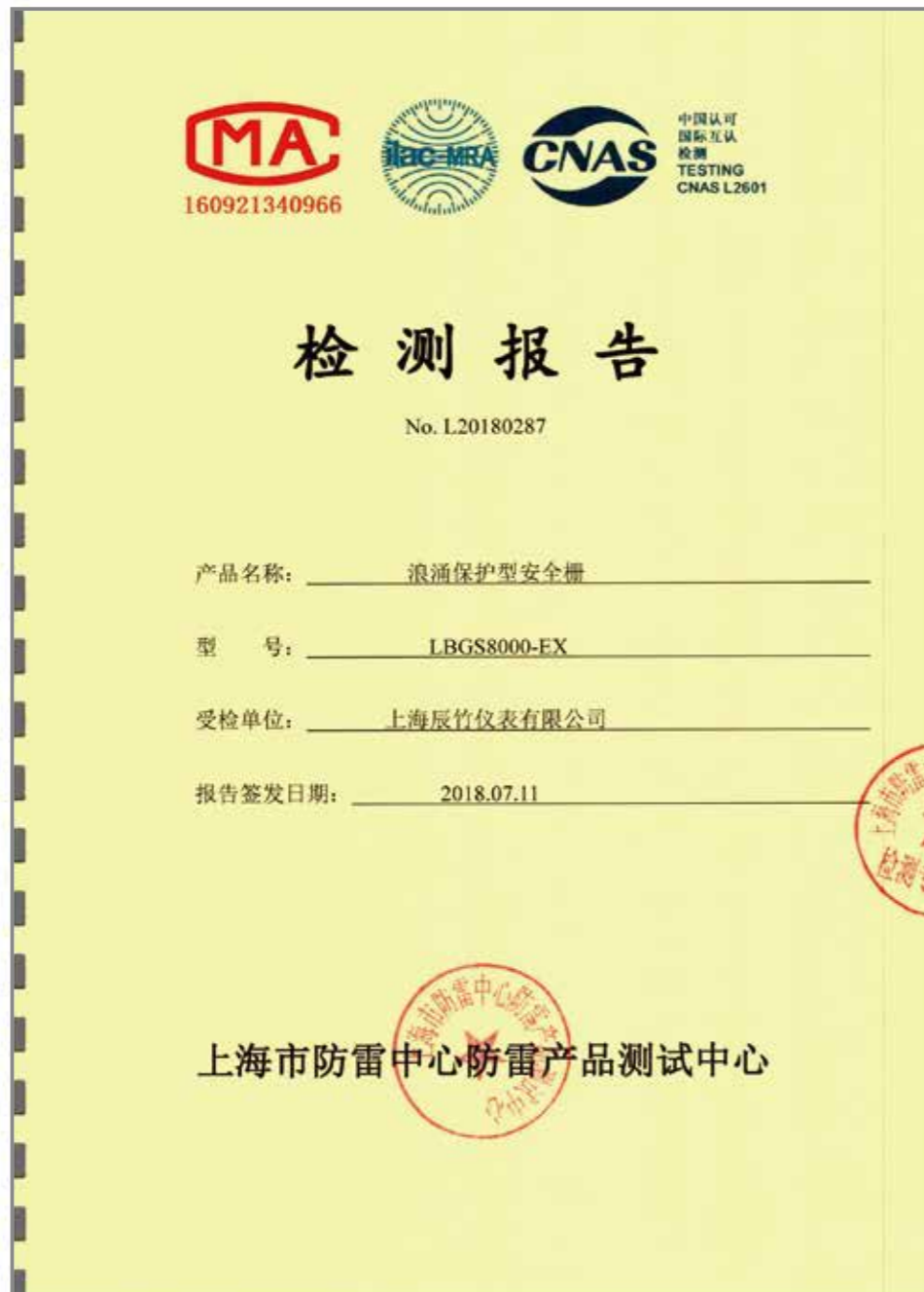
Based on ISO/IEC/GB standards, CHENZHU has established the professional laboratory which is applied up to 70 test capabilities and verification items in CHENZHU's safety electrical products' development process.



## Smart Factory

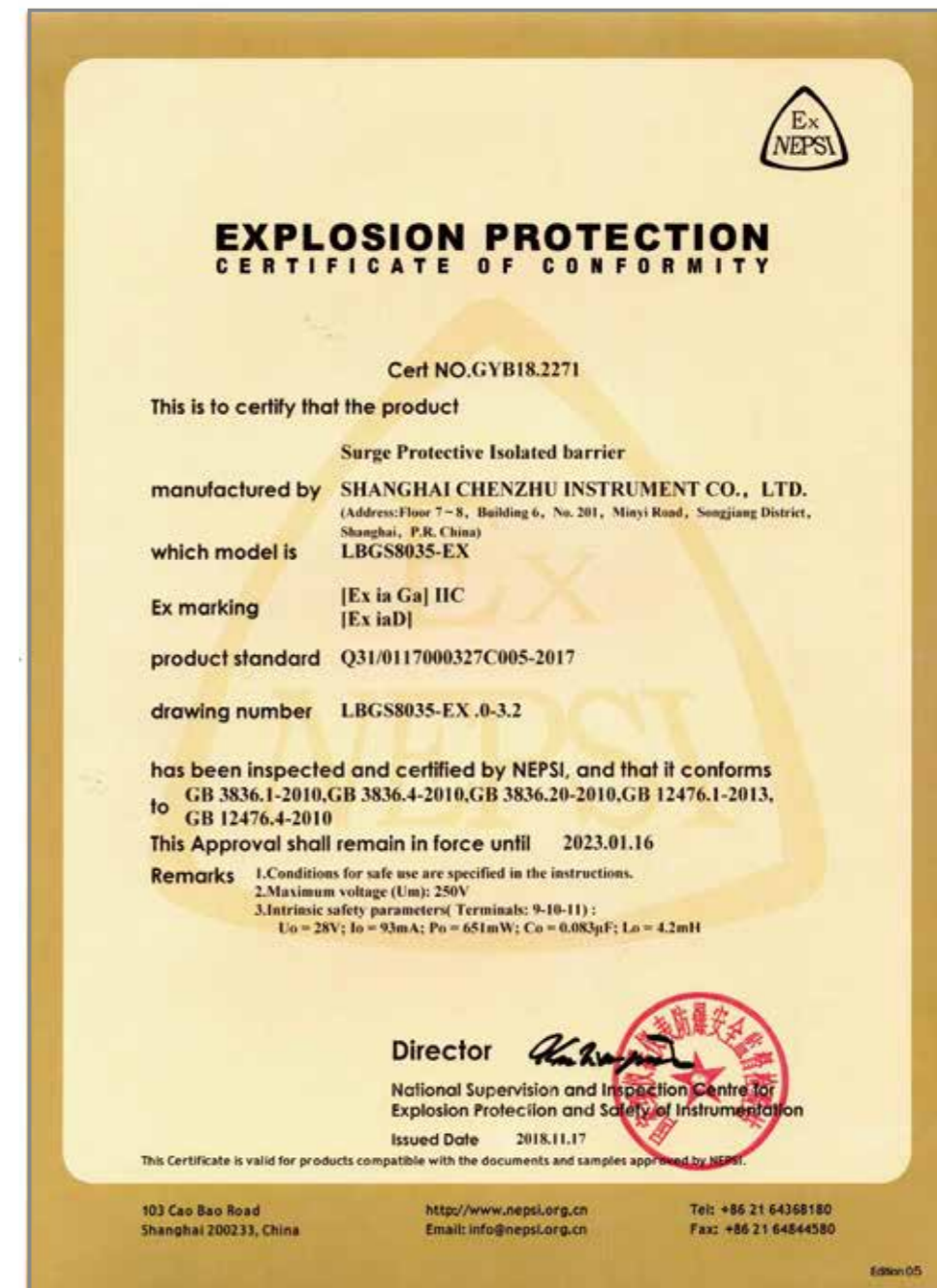
CHENZHU factory is continually driven by lean management and flexible production. By our strict quality examination, CHENZHU ensures the production meets the design specification and satisfies our customers.





Code and standards: IEC61643-21:2012(GB/T 18802.21-2016):  
Low voltage surge protection device-Part 21

Certificate authority: Shanghai Lightning Protection Center

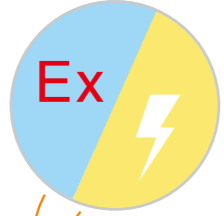


Code and standards: GB3836.0 Explosive atmospheres  
- Part 0: Equipment - General requirements  
GB3836.4 Explosive atmospheres  
- Part 4: Equipment protection by intrinsic safety "i"

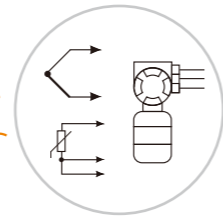
Certificate authority: NEPSI

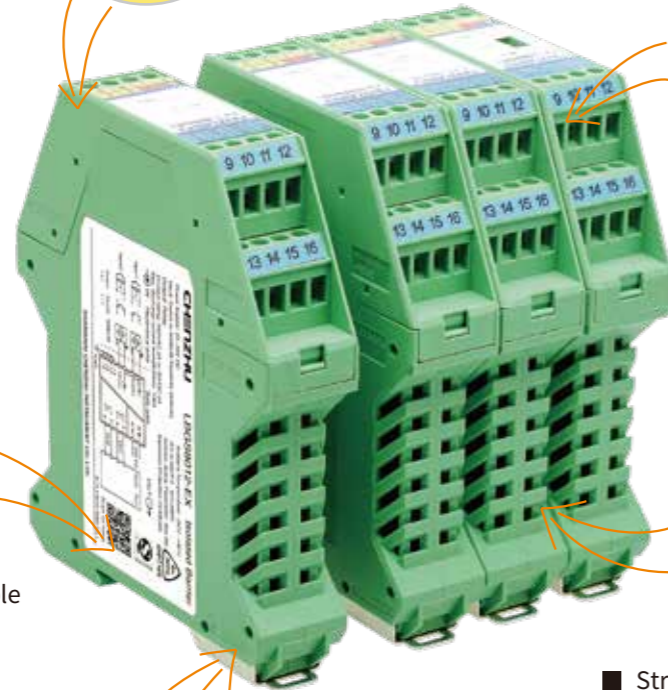
LBGS8000-EX range surge protective isolated barriers integrate functions such as intrinsically safe explosion-proof, signal isolation and conversion, surge protection. It integrates high-quality surge protection units at the intrinsically safe part to withstand 3kA surge current. From a functional point of view, intrinsically safe explosion-proof and surge protection are combined, saving the total cost and installation space.

**■ Integrate surge protection and IS explosion-proof**




**■ Wide Applicability**  
Suitable for various field apparatus: intrinsically safe temperature sensors, transmitters, valve positioners, etc.

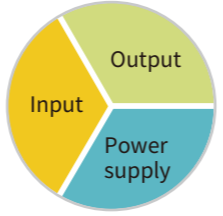




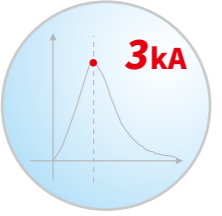
**■ Easy Installation and Disassemble**



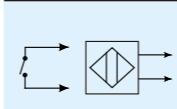
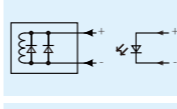
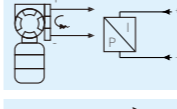
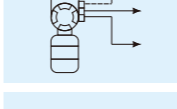
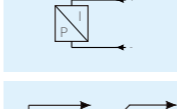
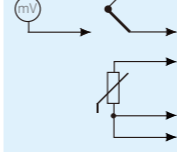
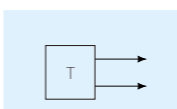
**■ Strong EMC Performance**  
Specially designed high dielectric strength transformer achieves reliable galvanic isolation and anti-interference among power supply, input, and output.



**■ Surge Protection Performance**  
The 3kA surge protection performance could meet the surge protection requirements of most signal circuits.



## LBGS8000-EX Range

Field instrument	Application	Module No.	Channels	Hazardous Side Signal	Control Side Signal	Features	Page
	Digital Input	LBGS8011-EX	1/1	Dry contact switch proximity switch input	Relay contact output	Independent powered	7
		LBGS8012-EX	2/2				
	Digital Output	LBGS8023-EX	1/1	Drive current at 45mA Output voltage ≥ 12V	Wet contact input	Loop powered	8
	Analog Converters	LBGS8031-EX	1/1	4~20mA HART	4~20mA HART	Loop powered	9
		LBGS8032-EX	2/2				
	Analog Input	LBGS8035-EX	1/2	2-wire or 3-wire transmitter Current source input	0/4~20mA 0/1-5V	Independent powered	10
		LBGS8047-EX	1/1				
	Analog Output	LBGS8067-EX	1/1	0/4~20mA output	0/4~20mA input	Independent powered	12
	Temperature Converters	LBGS8077-EX	1/1	RTD input	4~20mA output	Loop powered Configurable	13
		LBGS8071-EX	1/1	RTD input	0~20mA, 4~20mA 0~5V, 1~5V output	Independent powered Configurable	14
		LBGS8072-EX	1/1	TC, mV input			
	Communication Input	LBGS8093-EX	1/1	RS-485 half duplex	RS-485 half duplex	Independent powered	16

# Digital Input

1/1: LBGS8011-EX  
2/2: LBGS8012-EX

Digital input and relay output isolated barriers, with surge protection function, transfer digital signals(dry contact or NAMUR proximity switch) from hazardous area to safe area. It also supports to select phase reversal and to enable the line fault detection. The product needs an independent power supply and galvanic isolation among power supply, input and output.



Dimensions:114.5mm×99.0mm×22.5mm



## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

Supply Voltage: 20~35V DC

Current Consumption: (Supply voltage: 24V; Output energized)

- $\leq 40mA$ (LBGS8011-EX)
- $\leq 60mA$ (LBGS8012-EX)

### Safe-area Relay Output:

- Response Time:  $\leq 20ms$
- Contact Loading: 250V AC,2A or 30V DC,2A
- Load Type: resistive load

### Hazardous-area Input:

- Signal: Dry contact or NAMUR proximity switch
- Open-circuit Voltage:  $\approx 8V$
- Short-circuit Current:  $\approx 8mA$

### Input and Output Characteristics(Normal phase):

If field switch closes or input loop current  $> 2.1mA$ , output relay will be energized, with yellow LED ON.

If field switch closes or input loop current  $< 1.2mA$ , output relay will be de-energized, with yellow LED OFF.

### Function of the DIP Switch:

Sta.	K1(OUT1) K2(OUT2)	K3
ON	Inverted phase	Line break detect OFF
OFF	Normal phase	Line break detect ON

Note: When using the line break detection function, a 10k $\Omega$  resistance should be connected in parallel across the switch.

**Power Supply Protection:** Power supply reverse protection

**EMC:** According to IEC 61326-1(GB/T 18268)

**Ambient Temperature:** -20°C~+60°C

### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

Between power supply part and output part  $\geq 500V$  AC

### Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

Between power supply part and output part  $\geq 100M\Omega$

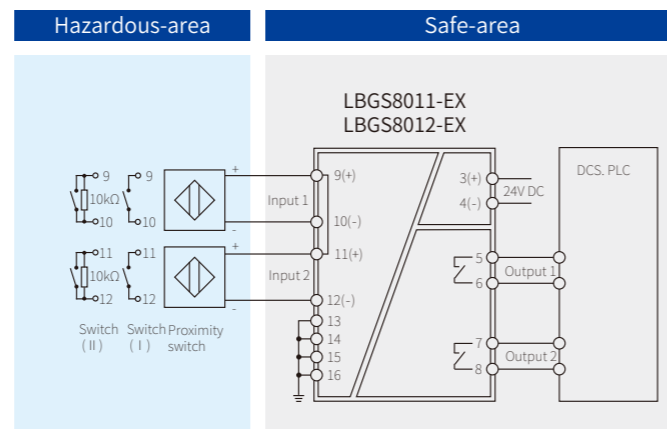
**Weight:** Approx. 100g(LBGS8011-EX)

Approx. 150g(LBGS8012-EX)

**Suitable Location:** Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

**Suitable Field Apparatus:** Dry contact or DIN19234 standard NAMUR proximity switch input field devices (including the intrinsically safe type pressure switch, temperature switches, liquid level switches, etc.)

## Connection



Note: LBGS8011-EX only contains input1 and output1.

## Explosion-proof Certificate

Certificate Authority:NEPSI (China)

Ex Marking:[Ex ia Ga] II C

[Ex iaD]

Maximum Voltage: $U_m=250V$

Intrinsic Safety Parameters: Terminals (9, 10; 11, 12)

$U_o=10.5V, I_o=14mA, P_o=37mW$

II C:  $C_o=2.4\mu F, L_o=165mH$

\*II B:  $C_o=16.8\mu F, L_o=495mH$

II A:  $C_o=75.0\mu F, L_o=1000mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

# Digital Output

1/1: LBGS8023-EX

Digital output isolated barrier, with surge protection function, control the power supply in the safe area to drive field IS apparatus in the hazardous area, such as solenoid valves, LED and some other low-power loads. The input and output are each galvanically isolated, and this product is loop powered.



Dimensions:114.5mm×99.0mm×22.5mm



## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

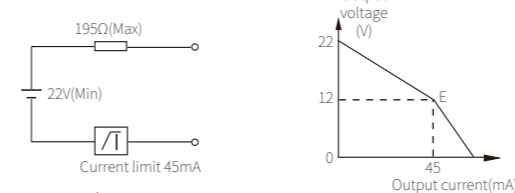
Supply Voltage: 20~35V DC

Current Consumption:  $\leq 80mA$ (Supply voltage:24V,output:45mA)

### Hazardous-area Output:

When the input switch is closed, power will be supplied to the device in the hazardous area.

When the input switch is open, power will not be supplied to the device in the hazardous area.



Open-circuit Voltage: 22V~24V

Output voltage at 45mA:  $\geq 12V$

**Response Time:**  $\leq 20ms$

**Power Supply Protection:** Power supply reverse protection

**EMC:** According to IEC 61326-1(GB/T 18268)

**Ambient Temperature:** -20°C~+60°C

### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

### Insulation Resistance:

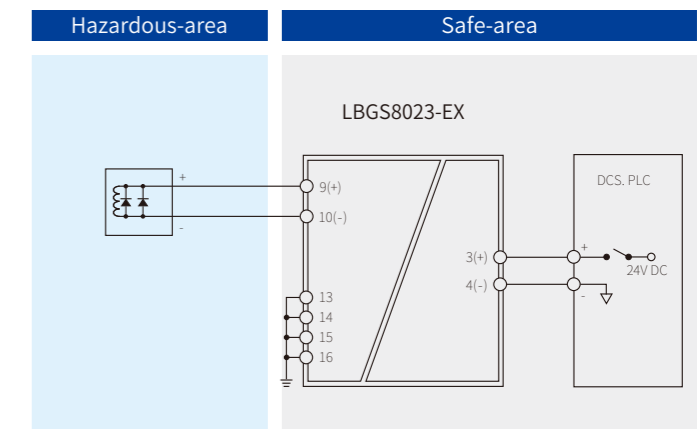
Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

**Weight:** Approx. 100g

**Suitable Location:** Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

**Suitable Field Apparatus:** Solenoid valves, LED

## Connection



## Explosion-proof Certificate

Certificate Authority:NEPSI (China)

Ex Marking:[Ex ia Ga] II C

[Ex iaD]

Maximum Voltage: $U_m=250V$

Intrinsic Safety Parameters: Terminals (9, 10)

$U_o=25V, I_o=140mA, P_o=875mW$

II C:  $C_o=0.11\mu F, L_o=1.32mH$

\*II B:  $C_o=0.84\mu F, L_o=3.96mH$

II A:  $C_o=2.97\mu F, L_o=10.56mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

# Analog Converters ( Loop Powered )

1/1: LBGS8031-EX  
2/2: LBGS8032-EX

These products have surge protection function at intrinsically safe part. They can not only work as AI isolated barriers to provide a separate power to the transmitter in the hazardous area and transfer the current from hazardous area to safe area., but also can work as AO isolated barriers to transfer current signal from the safe area to the hazardous area and drive field actuator devices. It allows bi-directional transmission of HART communication signals. The input and output are each galvanically isolated, and these products are loop powered.

## Specification

### Surge Protection Specification:

Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA  
Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)  
Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)  
Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

Supply Voltage: 20~30V DC

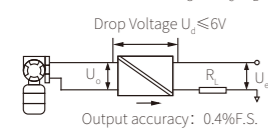
### Application 1(AI):

#### Safe-area Output:

Current: 4~20mA,HART digital signal  
HART Communication Load Resistance  $R_L \geq 250\Omega$

#### Hazardous-area Input:

Current: 4~20mA,HART digital signal  
Supply Voltage:  $U_o \geq U_e - R_L \times 0.02-6$



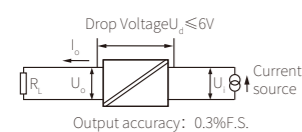
### Application 2(AO):

#### Safe-area Input:

Current: 4~20mA,HART digital signal

#### Hazardous-area Output:

Current: 4~20mA,HART digital signal  
Load Resistance:  $R_L \leq (U_r - 6)/0.02$   
HART Communication Load Resistance  $R_L \geq 250\Omega$



Temperature Drift: 0.01%F.S./°C

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

#### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

#### Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

Weight: Approx. 100g(LBGS8031-EX)

Approx. 150g(LBGS8032-EX)

Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 1 IIC and zone 21 IIIC

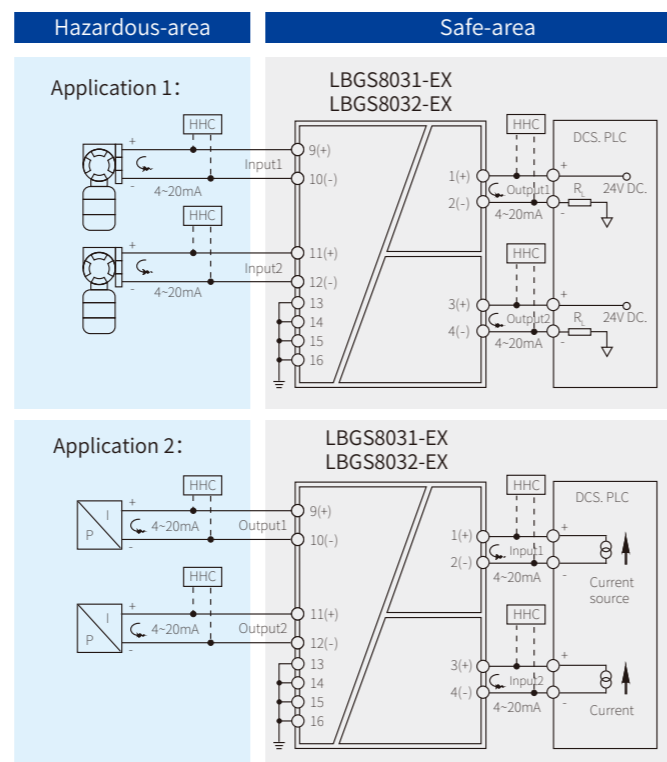
#### Suitable Field Apparatus:

- 2-wire(HART)transmitter,2-wire transmitter(Application 1)
- 2-wire valve positioner,electrical converter(Application 2)



Dimensions:114.5mm×99.0mm×22.5mm

## Connection



Note: a)LBGS8031-EX only contains input1 and output1;  
b)Can't use HHC (HART Hand Held Communicator) in hazardous area and safe area at the same time;  
c)HHC (HART Hand Held Communicator) used in the hazardous area must get the explosion-proof certificate.

## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ib Gb] II C  
[Ex ibD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters: Terminals(9, 10; 11, 12)

$U_o=23.1V, I_o=29mA, P_o=670mW$

II C:  $C_o=0.096\mu F, L_o=0.5mH$

\*II B:  $C_o=0.288\mu F, L_o=1.5mH$

II A:  $C_o=0.528\mu F, L_o=4.0mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

# Analog Input

1/2: LBGS8035-EX

Analog input isolated barrier, with surge protection function, provide isolated power supply for 2-wire or 3-wire transmitters in hazardous area and transfer the 4~20 mA signal from hazardous area to safe area. The product needs an independent power supply and galvanic isolation among power supply, input and output.

## Specification

### Surge Protection Specification:

Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA  
Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)  
Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)  
Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

Supply Voltage: 20~35V DC

Current Consumption:  $\leq 100mA$ (Supply voltage:24V;output:20mA)

### Safe-area Output:

Current: 0/4~20mA; Load Resistance:  $R_L \leq 300\Omega$

Voltage: 0/1~5V; Load Resistance:  $R_L \geq 20k\Omega$

Note:Customers need specify current or voltage output when ordering.

### Hazardous-area Input:

Current: 0/4~20mA

Distribution: Open-circuit Voltage:  $\leq 26V$

Voltage at 20mA:  $\geq 15.5V$

Output Accuracy: 0.1%F.S.(Typical: 0.05%F.S.)

Temperature Drift: 0.005%F.S./°C

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

#### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

Between power supply part and output part  $\geq 500V$  AC

#### Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

Between power supply part and output part  $\geq 100M\Omega$

Weight: Approx. 100g

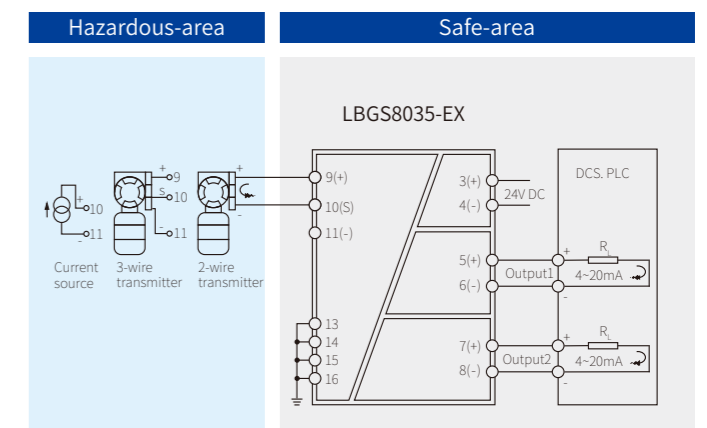
Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

Suitable Field Apparatus: 2-wire or 3-wire transmitter, current source



Dimensions:114.5mm×99.0mm×22.5mm

## Connection



## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ia Ga] II C  
[Ex iaD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters: Terminals(9, 10,11)

$U_o=28V, I_o=93mA, P_o=651mW$

II C:  $C_o=0.083\mu F, L_o=4.2mH$

\*II B:  $C_o=0.65\mu F, L_o=12.6mH$

II A:  $C_o=2.15\mu F, L_o=33.6mH$

\*II B Intrinsic safety parameters are also suitable for dust explosion protection[Ex iaD]

# Analog Input

## 1/1: LBGS8047-EX

Analog input isolated barrier, with surge protection function, provide isolated power supply for 2-wire or 3-wire transmitters in hazardous area and transfer the 4~20 mA signal from hazardous area to safe area. The product needs an independent power supply and galvanic isolation among power supply, input and output.

### Specification

#### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

#### Isolated Barrier Specification:

**Supply Voltage:** 20~35V DC

**Current Consumption:**  $\leq 70mA$ (Supply voltage:24V;output:20mA)

#### Safe-area Output:

- Current: 0/4~20mA,HART digital signal
- Load Resistance:  $R_L \leq 800\Omega$
- Voltage: 0/1~5V; Load Resistance:  $R_L \geq 330k\Omega$
- Note:Customers need specify current or voltage output when ordering.

#### Hazardous-area Input:

- Current: 0/4~20mA,HART digital signal
- Distribution: Open-circuit Voltage:  $\leq 26V$
- Voltage at 20mA:  $\geq 15.5V$

**Output Accuracy:** 0.1%F.S.(Typical: 0.05%F.S.)

**Temperature Drift:** 0.005%F.S./°C

**Response Time(0~90%):**  $\leq 2ms$

**Power Supply Protection:** Power supply reverse protection

**EMC:** According to IEC 61326-1(GB/T 18268)

**Ambient Temperature:** -20°C~+60°C

#### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

Between power supply part and output part  $\geq 500V$  AC

#### Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

Between power supply part and output part  $\geq 100M\Omega$

**Weight:** Approx. 100g

**Suitable Location:** Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

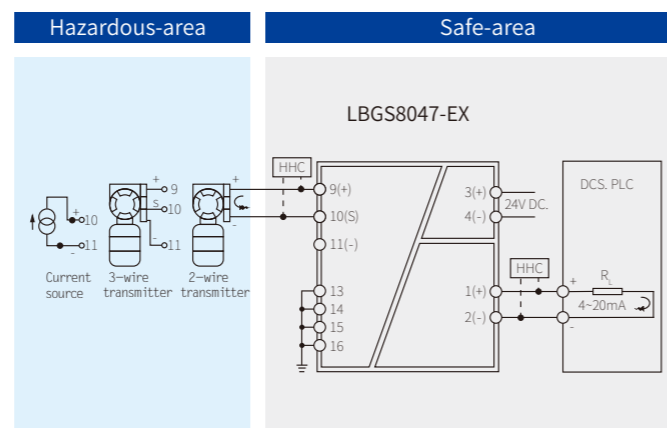
**Suitable Field Apparatus:** 2-wire(HART)transmitter, 3-wire transmitter,current source



Dimensions:114.5mm×99.0mm×22.5mm



### Connection



Note: a)Can't use HHC (HART Hand Held Communicator) in hazardous area and safe area at the same time;  
b)HHC (HART Hand Held Communicator) used in the hazardous area must get the explosion-proof certificate.

### Explosion-proof Certificate

**Certificate Authority:**NEPSI(China)

**Ex Marking:** [Ex ia Ga] II C  
[Ex iaD]

**Maximum Voltage:**  $U_m=250V$

**Intrinsic Safety Parameters: Terminals(9, 10, 11)**

$U_o=28V, I_o=93mA, P_o=651mW$

II C:  $C_o=0.083\mu F, L_o=4.2mH$

\*II B:  $C_o=0.65\mu F, L_o=12.6mH$

II A:  $C_o=2.15\mu F, L_o=33.6mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

# Analog Output

## 1/2: LBGS8067-EX

Analog output isolated barrier, with surge protection function, transfer the 4~20mA signal from safe area to hazardous area to drive field actuators. The product needs an independent power supply and galvanic isolation among power supply, input and output.

### Specification

#### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

#### Isolated Barrier Specification:

**Supply Voltage:** 20~35V DC

**Current Consumption:**  $\leq 60mA$ (Supply voltage:24V;output:20mA)

#### Safe-area Input:

- Current: 0/4~20mA
- Voltage:  $\geq 2V$

#### Hazardous-area Output:

- Current: 0/4~20mA; Load Resistance:  $R_L \leq 750\Omega$
- Voltage: 0/1~5V; Load Resistance:  $R_L \geq 20k\Omega$

Note: Customers need specify current or voltage output when ordering.

**Output Accuracy:** 0.1%F.S.(Typical: 0.05%F.S.)

**Temperature Drift:** 0.005%F.S./°C

**Response Time(0~90%):**  $\leq 3ms$

**Power Supply Protection:** Power supply reverse protection

**EMC:** According to IEC 61326-1(GB/T 18268)

**Ambient Temperature:** -20°C~+60°C

#### Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC

Between power supply part and output part  $\geq 500V$  AC

#### Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$

Between power supply part and output part  $\geq 100M\Omega$

**Weight:** Approx. 100g

**Suitable Location:** Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

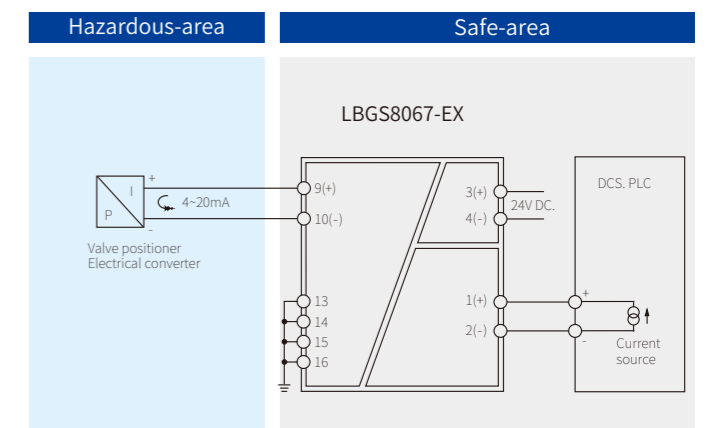
**Suitable Field Apparatus:** 2-wire valve positioner, electrical converter



Dimensions:114.5mm×99.0mm×22.5mm



### Connection



### Explosion-proof Certificate

**Certificate Authority:**NEPSI(China)

**Ex Marking:** [Ex ia Ga] II C  
[Ex iaD]

**Maximum Voltage:**  $U_m=250V$

**Intrinsic Safety Parameters: Terminals(9, 10)**

$U_o=28V, I_o=93mA, P_o=651mW$

II C:  $C_o=0.083\mu F, L_o=4.2mH$

\*II B:  $C_o=0.65\mu F, L_o=12.6mH$

II A:  $C_o=2.15\mu F, L_o=33.6mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]



# Temperature Converter(Loop powered)

1/1: LBGS8077-EX

RTD input and loop powered isolated barrier, with surge protection function, convert RTD signals in hazardous area into current or voltage signals and output to safe area. It can be configured by computer. It is suitable for DCS and PLC systems with loop power supply.



Dimensions:114.5mm×99.0mm×22.5mm



## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

Supply Voltage: 12~30V DC

### Safe-area Output:

- Current: 4~20mA
- Load Resistance:  $R_L \leq (U_e - 12) / 0.021$

### Hazardous-area Input:

- Input Signal: please check the table 'Input Signal and Range'.
- Note: Customers need specify signal type and range when ordering.

### Input Signal Monitoring:

Input	Output
Overrange	20.8mA
Underrange	3.8mA
Line breakage	20.8mA

(Note: The current of line breakage alarm current <4mA or other special requirements need to be customized)

Temperature Drift: 0.01%F.S./°C

Response Time(0~90%): ≤1s

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part ≥2500V AC

Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part ≥100MΩ

Weight: Approx. 100g

Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

Suitable Field Apparatus: 2-wire or 3-wire RTD

## Input Signal and Range

	Type	Range	Min.Span	Accuracy
RTD	Pt100	-200°C~+850°C	20°C	0.2°C / 0.1%
	Cu50	-50°C~+150°C	20°C	0.2°C / 0.1%
	Cu100	-50°C~+150°C	20°C	0.2°C / 0.1%

Note:

- The “%” of conversion accuracy is relative to its range. Take the larger value between the relative error and the absolute error when applying.
- Allow a maximum wire resistance of 50Ω/line for RTD input (3-wire).

# Temperature Converter

1/1: LBGS8071-EX

RTD input isolated barrier, with surge protection function, convert RTD signals in hazardous area into current or voltage signals and output to safe area. It can be configured by computer. The product needs an independent power supply and galvanic isolation among power supply, input and output.



Dimensions:114.5mm×99.0mm×22.5mm



## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

Supply Voltage: 20~35V DC

Current Consumption: ≤50mA(Supply voltage:24V;output:20mA)

### Safe-area Output:

- Current: 0~20mA,4~20mA; Load Resistance:  $R_L \leq 550\Omega$
- Voltage: 0~5V,1~5V; Load Resistance:  $R_L \geq 20k\Omega$
- Note:Customers need specify current or voltage output when ordering.

### Hazardous-area Input:

- Input Signal: please check the table 'Input Signal and Range'.
- Note: Customers need specify current or voltage output when ordering.

### Input Signal Monitoring:

Input	Output	Indicating
Overrange	20.8mA	LED H flashing
Underrange	3.8mA	LED L flashing
Line breakage	20.8mA	LED H and LED L flashing simultaneously
Line shorted	3mA	LED H and LED L flashing simultaneously

(Note: The current of line breakage alarm current <4mA or other special requirements need to be customized)

Temperature Drift: 0.01%F.S./°C

Response Time(0~90%): ≤1s

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part ≥2500V AC

Between power supply part and output part ≥500V AC

Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part ≥100MΩ

Between power supply part and output part ≥100MΩ

Weight: Approx. 100g

Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

Suitable Field Apparatus: 2-wire or 3-wire RTD

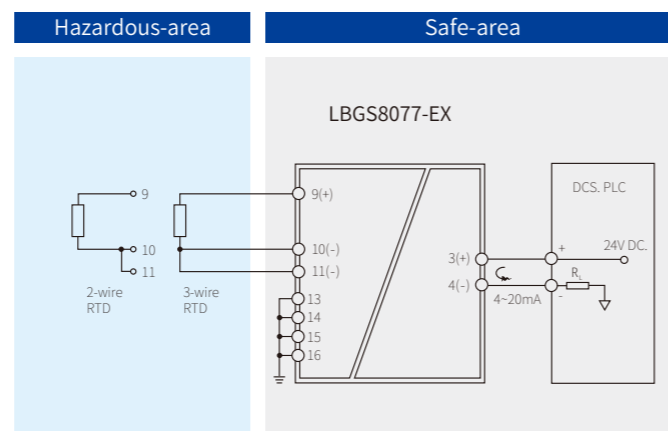
## Input Signal and Range

	Type	Range	Min.Span	Accuracy
RTD	Pt100	-200°C~+850°C	20°C	0.2°C / 0.1%
	Cu50	-50°C~+150°C	20°C	0.2°C / 0.1%
	Cu100	-50°C~+150°C	20°C	0.2°C / 0.1%

Note:

- The “%” of conversion accuracy is relative to its range. Take the larger value between the relative error and the absolute error when applying.
- Allow a maximum wire resistance of 50Ω/line for RTD input (3-wire).

## Connection



Note: a)3-wire RTD input needs to ensure that the resistance values of the three wires are as equal as possible.  
b)2-wire RTD input needs short-circuit between terminals 10 and 11.

## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ia Ga] II C

[Ex iaD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters: Terminals(9, 10, 11)

$U_o=8.5V, I_o=95mA, P_o=209mW$

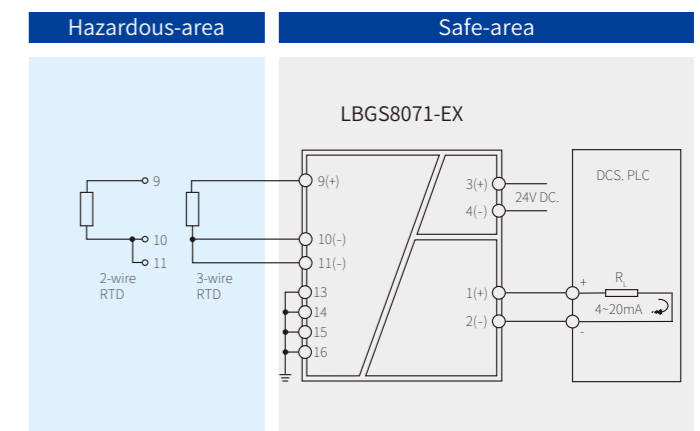
II C:  $C_o=6.5\mu F, L_o=2.3mH$

\*II B:  $C_o=60\mu F, L_o=6.9mH$

II A:  $C_o=1000\mu F, L_o=18.4mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

## Connection



Note: a)3-wire RTD input needs to ensure that the resistance values of the three wires are as equal as possible.  
b)2-wire RTD input needs short-circuit between terminals 10 and 11.

## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ia Ga] II C

[Ex iaD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters: Terminals(9, 10, 11)

$U_o=8.5V, I_o=20mA, P_o=43mW$

II C:  $C_o=6.5\mu F, L_o=3.6mH$

\*II B:  $C_o=60\mu F, L_o=10.8mH$

II A:  $C_o=1000\mu F, L_o=28.8mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

# Temperature Converter

1/1: LBGS8072-EX

TC input isolated barrier, with surge protection function, convert TC and mV signals in hazardous area into current or voltage signals and output to safe area. It integrates CJC function in terminals and can be configured by computer. The product needs an independent power supply and galvanic isolation among power supply, input and output.

## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

- Supply Voltage: 20~35V DC
- Current Consumption:  $\leq 50mA$ (Supply voltage:24V;output:20mA)
- Safe-area Output:

- Current: 0~20mA,4~20mA; Load Resistance:  $R_L \leq 550\Omega$
- Voltage: 0~5V,1~5V; Load Resistance:  $R_L \geq 20k\Omega$
- Note:Customers need specify current or voltage output when ordering.

### Hazardous-area Input:

- Input Signal: please check the table 'Input Signal and Range'.
- Note: Customers need specify signal type and range when ordering.

### Input Signal Monitoring:

Input	Output	Indicating
Overrange	20.8mA	LED H flashing
Underrange	3.8mA	LED L flashing
Line breakage	20.8mA	LED H and LED L flashing simultaneously

(Note: The current of line breakage alarm current <4mA or other special requirements need to be customized)

Temperature Drift: 0.01%F.S./°C

CJC Error:  $\pm 1^\circ C$ (Compensation range: -20°C~60°C)

Response Time(0~90%):  $\leq 1s$

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC  
Between power supply part and output part  $\geq 500V$  AC

Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$   
Between power supply part and output part  $\geq 100M\Omega$

Weight: Approx. 100g

Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

Suitable Field Apparatus: TC, mV signal

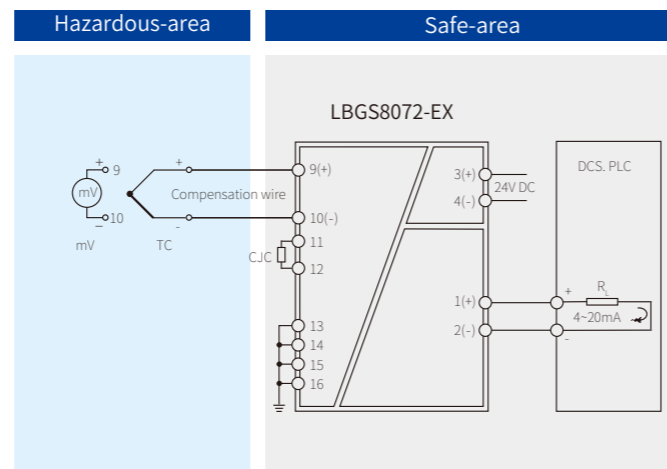
### Input Signal and Range

	Type	Range	Min.Span	Accuracy
TC	T	-200°C~+400°C	50°C	0.5°C / 0.1%
	E	-200°C~+900°C	50°C	0.5°C / 0.1%
	J	-200°C~+1200°C	50°C	0.5°C / 0.1%
	K	-200°C~+1372°C	50°C	0.5°C / 0.1%
	N	-200°C~+1300°C	50°C	0.5°C / 0.1%
	R	-40°C~+1768°C	500°C	1.5°C / 0.1%
	S	-40°C~+1768°C	500°C	1.5°C / 0.1%
mV	B	+320°C~+1820°C	500°C	1.5°C / 0.1%
		-100mV~+100mV	10mV	20uV / 0.1%



Dimensions:114.5mm×99.0mm×22.5mm

## Connection



## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ia Ga] II C [Ex iaD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters: Terminals(9, 10)

$U_0=8.5V, I_0=20mA, P_0=43mW$

II C:  $C_0=6.5\mu F, L_0=3.6mH$

\*II B:  $C_0=60\mu F, L_0=10.8mH$

II A:  $C_0=1000\mu F, L_0=28.8mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]

Note:

- The "%” of conversion accuracy is relative to its range. Take the larger value between the relative error and the absolute error when applying.
- When the thermocouple is input, the conversion accuracy does not include the CJC. For every 100Ω increase in the compensation wire, the cold junction error increases by 0.2°C.
- When the Type B thermocouple is input, the temperature range is required to be greater than 680 °C to ensure the accuracy index.
- mV signal input needs to be customized.

# Communication Input

1/1: LBGS8093-EX

RS-485 isolated barrier, with surge protection function, provide isolated power supplies for field devices and transfer the RS-485 digital signal between hazardous area and safe area. This product needs an independent power supply and galvanic isolation among power supply, input and output.

## Specification

### Surge Protection Specification:

- Nominal Discharge Current  $I_n(8/20\mu s)$ : 3kA
- Voltage Protection Level  $U_p(8/20\mu s)$ : 60V(L-L)
- Voltage Protection Level  $U_p(8/20\mu s)$ : 600V(L-G)
- Standard: According to IEC61643-21:2012 (GB/T 18802.21-2016)

### Isolated Barrier Specification:

- Supply Voltage: 20~35V DC
- Current Consumption:  $\leq 160mA$ (Supply voltage:24V;distribution: 6V/100mA)
- Safe-area Signal:

- Signal: RS-485(half duplex)

### Hazardous-area Signal:

- Signal: RS-485(half duplex)
- Distribution power: 5V/100mA. 6V/100mA. 8V/50mA. 9V/50mA. 12V/50mA

Note: Customers need specify distribution power when ordering.

### RS-485:

- Signal: Standard RS-485 differential level
- Transmission delay:  $\leq 10\mu s$
- Baud rate:  $\leq 56kbps$

Power Supply Protection: Power supply reverse protection

EMC: According to IEC 61326-1(GB/T 18268)

Ambient Temperature: -20°C~+60°C

Dielectric Strength:

Between non-intrinsically safe part and intrinsically safe part  $\geq 2500V$  AC  
Between power supply part and output part  $\geq 500V$  AC

Insulation Resistance:

Between non-intrinsically safe part and intrinsically safe part  $\geq 100M\Omega$   
Between power supply part and output part  $\geq 100M\Omega$

Weight: Approx. 150g

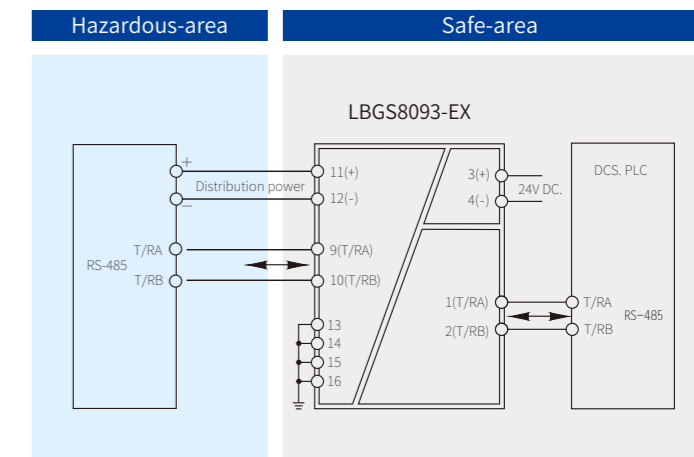
Suitable Location: Mounting in safe area, and connected to the IS apparatus in hazardous area up to zone 0 IIC and zone 20 IIIC

Suitable Field Apparatus: Device with RS485 communication interface



Dimensions:114.5mm×99.0mm×22.5mm

## Connection



## Explosion-proof Certificate

Certificate Authority:NEPSI(China)

Ex Marking: [Ex ia Ga] II C [Ex iaD]

Maximum Voltage:  $U_m=250V$

Intrinsic Safety Parameters:

Terminals(9, 10)

$U_0=8.5V, I_0=90mA, P_0=192mW$

II C:  $C_0=6.5\mu F, L_0=3.6mH$

\*II B:  $C_0=60\mu F, L_0=10.8mH$

II A:  $C_0=1000\mu F, L_0=28.8mH$

Terminals(11, 12):

$U_0=23.1V, I_0=187mA, P_0=1.08mW$

II C:  $C_0=0.1\mu F, L_0=0.8mH$

\*II B:  $C_0=1.0\mu F, L_0=2.4mH$

II A:  $C_0=3.6\mu F, L_0=6.4mH$

\*II B Intrinsic Safety Parameters are also suitable for dust explosion protection[Ex iaD]