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for Future Generations



YT-870 / 875 Series

Limit Switch Box

Product manual

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1 Introduction

1.1 General Information for the users

Thank you for purchasing Rotork YTC Limited products. Each product has been fully inspected after its production to offer you the highest quality and reliable performance. Please read the product manual carefully prior to installing and commissioning the product.

- Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly.
- The manual should be provided to the end-user.
- The manual can be altered or revised without any prior notice. Any changes in product's specification, design, and/or any components may not be printed immediately but until the following revision of the manual.
- The manual should not be duplicated or reproduced for any purpose without prior approval from Rotork YTC Limited, Gimpo-si, South Korea.
- In case of any other problems that are not stated in this manual, please make immediate contact to Rotork YTC Limited.

1.2 Manufacturer Warranty

- For the safety, it is important to follow the instructions in the manual. Manufacturer will not be responsible for any damages caused by user's negligence.
- Any modifications or repairs to the product may only be performed if expressed in this manual. Injuries and physical damages caused by customer's modifying or repairing the product without a prior consultation with Rotork YTC Limited will not be compensated. If any alterations or modifications are necessary, please contact Rotork YTC Limited directly.
- The warranty period for the product is (12) months from the date of shipment unless otherwise stated. Customers can extend the warranty period by an additional (12) months by registering the product's serial number or lot number, customer information, and installation address on the warranty extension application site Product Registration (https://www.rotork.com/en/service/product-registration).
- Manufacturer warranty will not cover products that have been subjected to abuse, accidents, alterations, modifications, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; damages that occurs in shipment, due to act of God, failure due to power surge, or cosmetic damage. Improper or incorrectly performed maintenance will void this limited warranty.
- For detailed warranty information, please contact the corresponding local Rotork YTC Limited office or main office in South Korea.

1.3 Explosion Proof Warning

Please ensure the unit is being used and installed in conformity with local, regional, and national explosion proof within the explosion proof certified environment.



- YT-870 / 875 is Explosion proof construction for internal pressure.
  For detail information, refer to “2.6 Certifications”
- Explosion proof type of cables and gaskets should be used, when explosion gases are present at the installation site. Please make sure that the sealing has been done completely.
- Keep cover tight while circuits are alive. - GARDER LE COUVERCLE BIEN FERME TANT QUE LES CIRCUITS SONT SOUS TENSION.
- Power should be turned off completely when opening product’s cover. When opening the cover, ensure that there is no power remaining in any electrical parts nearby.
- This product has 2 ports for power connection. Please make sure that Blind plug is tightened to the port when any port is not being used.
- For external ground terminal, ring terminal with surface area of more than 5.5 mm^2 should be used.
- There is risk of explosion due to electro-static charge. Static electricity charge may develop when cleaning the product with a dry cloth. It is imperative to avoid static electricity charge in the hazardous environment. If cleaning the surface of the product is needed, must use wet clothes. - RISQUE D’ÉLECTRICITÉ STATIQUE POTENTIEL. NETTOYER SEULEMENT AVEC UN LINGE IMBIBÉ D’EAU.
- <u>Special conditions for safe use of sign “X” of ATEX / IECEx :</u>
  The apparatus can be used in a temperature range between -20 °C to +60 °C.
  Repairs of the flameproof joints must be made in compliance with the structural specifications provided by the manufacturer. Repairs must be made on the basis of values specified in tables 2 and 3 of EN 60079-1 or IEC 60079-1.

2 Product Description

2.1 General

Limit switch box YT-870 / 875 series is a device which notifies the central control room or controller when the valve reaches the set position.

2.2 Main Features and Functions

- A wide range of uses with Type 4, 4X(CSA), IP67 protection grade.
- Various limit switch options available.
- Polyester powder coating of YT-870 resist the corrosion process.

2.3 Label Description

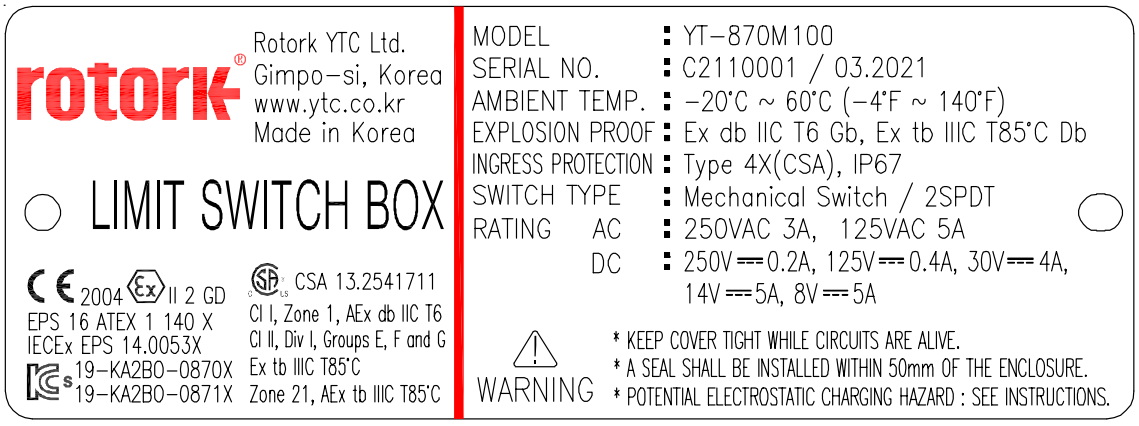


Fig. L-1: YT-870M (2xSPDT, ATEX, IECEx, CSA, KCs)

- MODEL : Indicates the model number and additional symbols.
- SERIAL NO. : Indicates unique serial number.
- MONTH.YEAR : Indicates manufactured month and year.
- AMBIENT TEMP. : Indicates allowed explosion proof ambient temperature range.
- EXPLOSION PROOF : Indicates certified explosion proof grade.
- INGRESS PROTECTION : Indicates enclosure protection grade.
- SWITCH TYPE : Indicates the type and quantity of built-in switches.
- RATING : Indicates the available voltage and current.

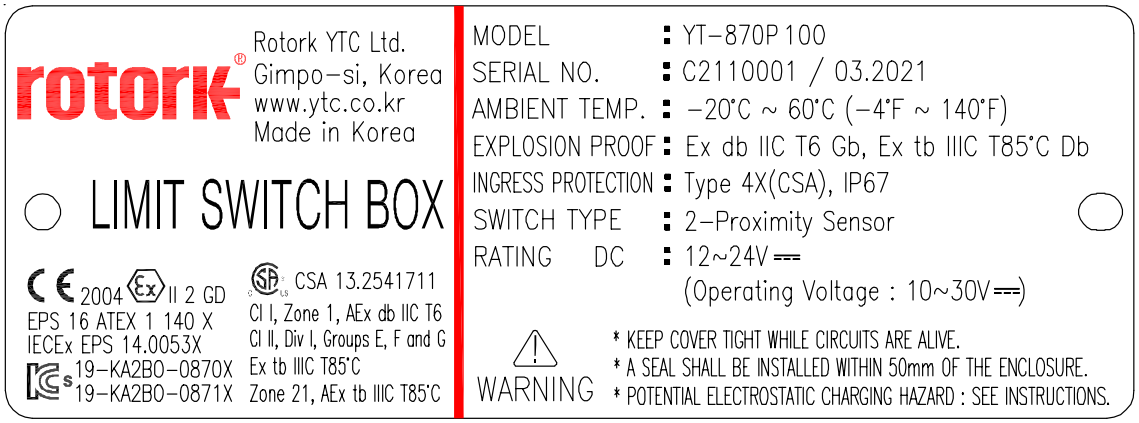


Fig. L-2: YT-870P (2xProximity sensor, NPN type, ATEX, IECEx, CSA, KCs)

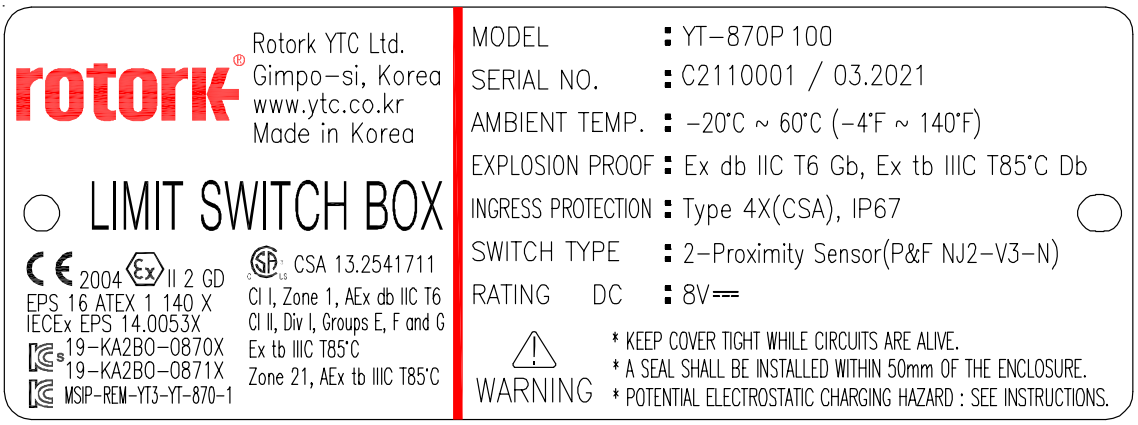


Fig. L-3: YT-870P (2xProximity sensor, NC type, ATEX, IECEx, CSA, KCs)

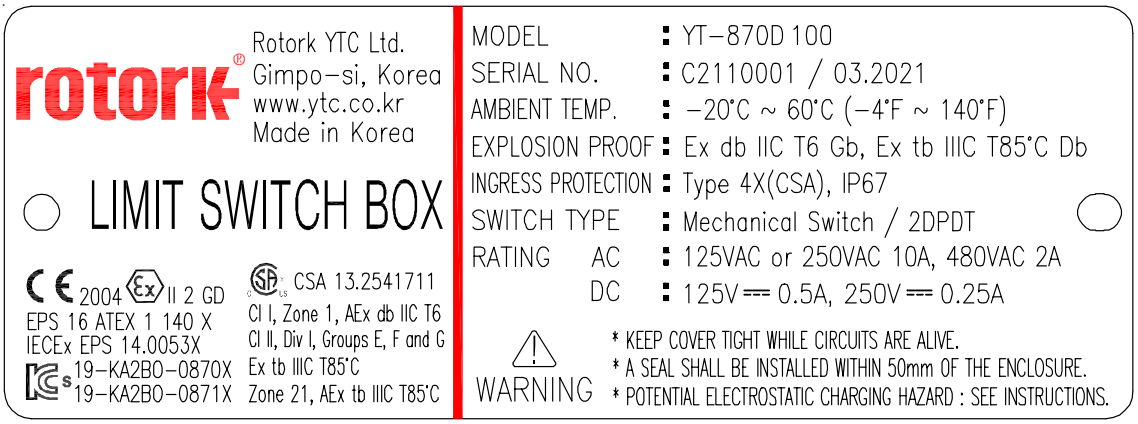


Fig. L-4: YT-870D (2xDPDT, ATEX, IECEx, CSA, KCs)

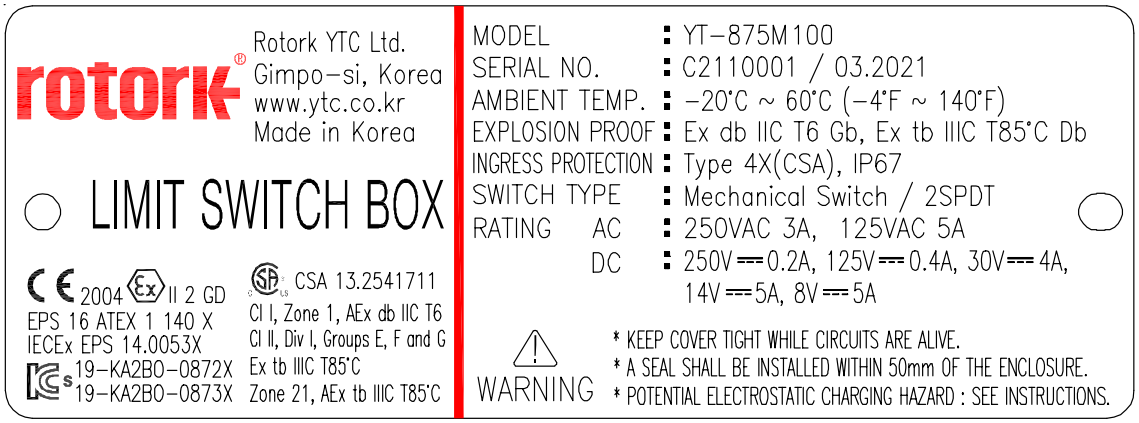


Fig. L-5: YT-875M (2xSPDT, ATEX, IECEx, CSA, KCs)

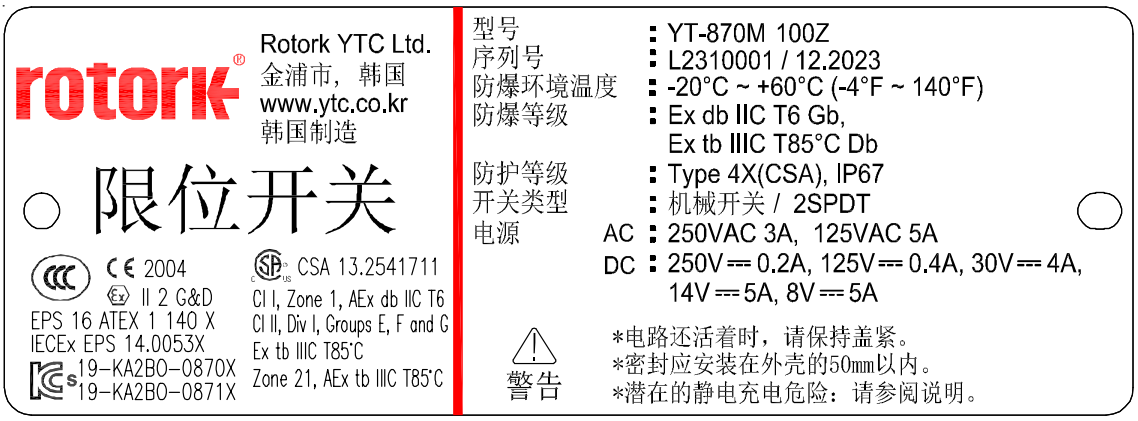


Fig. L-6: YT-870M (2xSPDT, CCC)

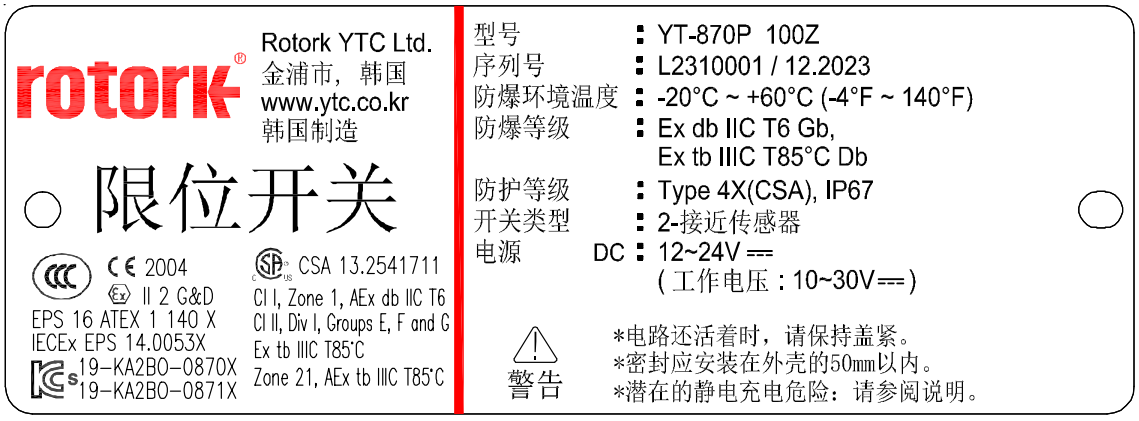


Fig. L-7: YT-870P (2xProximity sensor, NPN type, CCC)

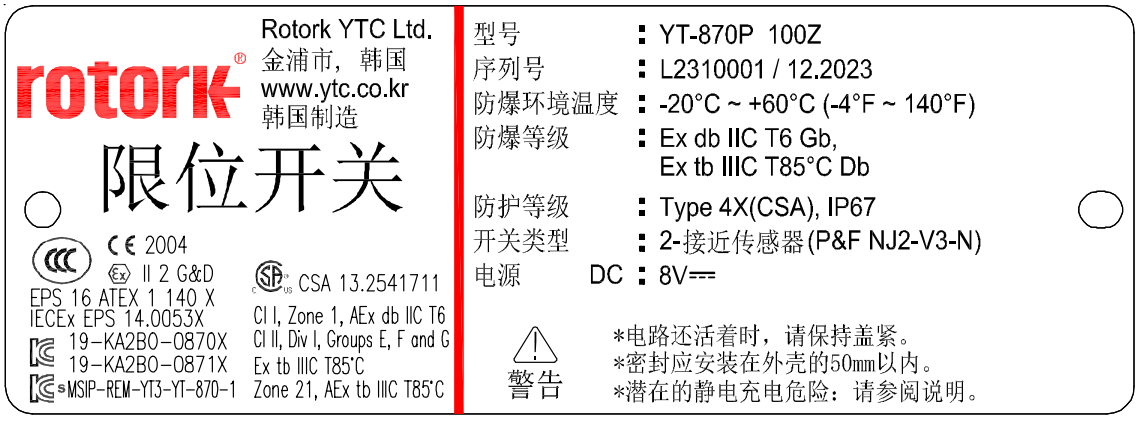


Fig. L-8: YT-870P (2xProximity sensor, NC type, CCC)

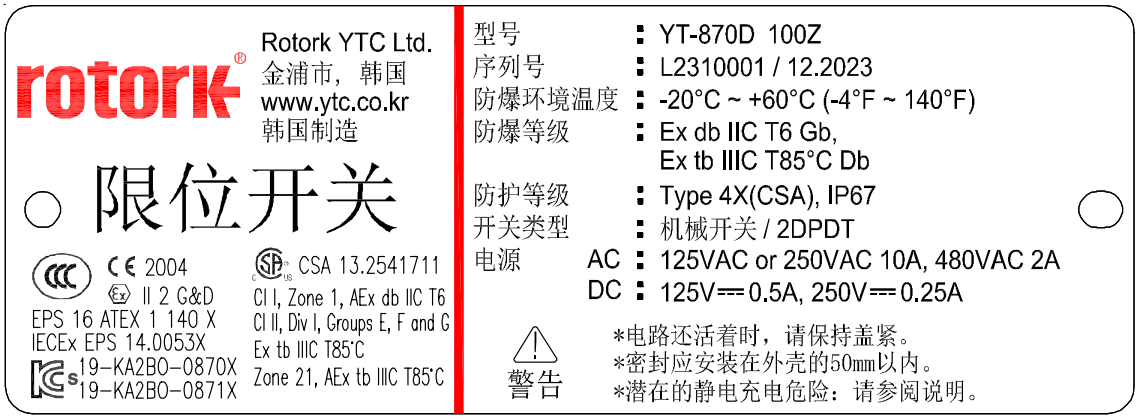


Fig. L-9: YT-870D (2xDPDT, CCC)

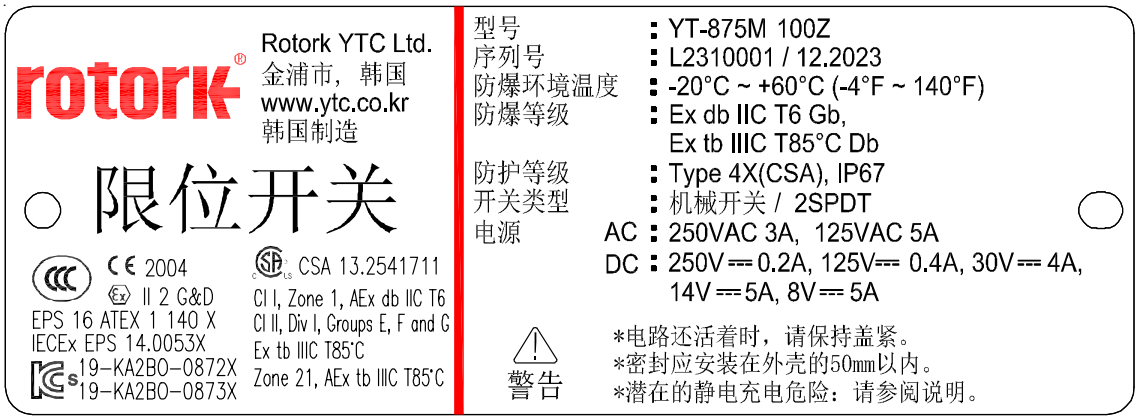


Fig. L-10: YT-875M (2xSPDT, CCC)

2.4 Product Code

YT-870 / 875 [1] [2] [3] [4] [5]

[1] Switch Type	M :	Mechanical, 2 x SPDT
	P :	Inductive proximity sensor x 2 [1]
	D :	Mechanical, 2 x DPDT
[2] Conduit Thread	1 :	3/4 NPT
	2 :	G 3/4 (only YT-870, except CCC)
	3 :	M20x1.5P (only YT-870)
	4 :	1/2 NPT (only YT-870)
[3] Bracket Type	0 :	None
	1 :	ST-1 (30 x 80, H20)
	2 :	ST-2 (30 x 80, H30)
	3 :	ST-3 (30 x 130, H30)
	4 :	ST-4 (30 x 130, H50)
[4] Option	0 :	None
	1 :	4-20 mA Analog Output [2]
[5] Explosion Protection	[3] blank :	Except CCC
	Z :	CCC

[1] Standard type is PSN17-5DNU (Autonics, NPN type).
PSN17-5DPU (Autonics, PNP type) is available for order.
NJ2-V3-N (P&F, NC type) is available for order.

[2] Only available for “M” in [1] Switch Type.

[3] Please leave it blank if it is not CCC certified.

2.5 Product Specification

2.5.1 Limit Switch Specification

Model		YT-870M / 875M	YT-870P / 875P		YT-870D / 875D
Switch Type		Mechanical, 2 x SPDT	Inductive proximity sensor x 2		Mechanical, 2 x DPDT
Model No. & Manufacturer		SS-5GL (OMRON)	<Standard> PSN17-5DNU (Autonics, NPN type)	<Option> NJ2-V3-N (P&F, NC type)	DZ-10G-1B (OMRON)
Switch Rating	**AC**	250 V 3 A 125 V 5 A	-	-	125 or 250 V 10 A
	DC	250 V 0.2 A, 125 V 0.4 A, 30 V 4 A, 14 V 5 A, 8 V 5 A	12 to 24 V	8 V	125 V 0.5 A, 250 V 0.25 A, 30 V 10 A, 14 V 10 A, 8 V 10 A
Terminal		8 Points			12 Points
Explosion Protection		Flameproof enclosure. Refer to “2.6 Certifications”			
Ingress Protection		Type 4, 4X(CSA), IP 67			
Ambient Temperature		-20 to 60 °C (-4 to 140 °F)			
Conduit Entry		YT-870 : 3/4 NPT or G 3/4(N/A for CCC) or M20x1.5P or 1/2 NPT YT-875 : 3/4 NPT			
Mounting Bracket Standard		NAMUR VDI/VDE 3845, ISO 5211			
Housing Material		YT-870 : Aluminum YT-875 : Stainless steel 316			
Painting		YT-870 : Polyester powder coating			
Weight		YT-870 : 1.5 kg (3.3 lb) YT-875 : 3.5 kg (7.7 lb)			

⚠ Tested under ambient temperature of 20 °C, absolute pressure of 760 mmHg, and humidity of 65 %.
Please contact Rotork YTC Limited for detailed testing specification.

2.5.2 Specification of Analog Output option

Motion Type	Rotary
Input Signal	0 to 90°
Output Signal	4-20 mA DC
External Load Resistance	Rext ≤ (Vs - 9) / 20 mA, 750 ohms @Vs = 24 V
Supply Voltage	Vs : 9 to 28 V DC
Linearity	± 1 % F.S.
Hysteresis	± 0.2 % F.S.
Sensitivity	± 0.2 % F.S

⚠ Tested under ambient temperature of 20 °C, absolute pressure of 760 mmHg, and humidity of 65 %.
Please contact Rotork YTC Limited for detailed testing specification.

2.6 Certifications

※ All certifications below are posted on Rotork YTC Limited homepage (www.ytc.co.kr).

➢ KCs (Korea)

1. Type : Explosion proof construction for internal pressure of gas
   Rating : Ex d IIC T6
   Certification No. : 19-KA2BO-0870X (YT-870)
   19-KA2BO-0872X (YT-875)
   Ambient temperature : -20 to +60°C

2. Type : Explosion proof construction for internal pressure of dust
   Rating : Ex tb IIIC T85°C
   Certification No. : 19-KA2BO-0871X (YT-870)
   19-KA2BO-0873X (YT-875)
   Ambient temperature : -20 to +60°C

➢ ATEX

Type : Explosion proof construction for internal pressure
Rating : II 2G Ex db IIC T6 Gb, II 2D Ex tb IIIC T85°C Db
Certification No. : EPS 16 ATEX 1 140 X
Ambient temperature : -20 to 60°C

➢ IECEx

Type : Explosion proof construction for internal pressure
Rating : Ex db IIC T6 Gb, Ex tb IIIC T85°C Db
Certification No. : IECEx EPS 14.0053X
Ambient temperature : -20 to 60°C

➢ CCC (China)

Type : Explosion proof construction for internal pressure
Rating : Ex db IIC T6 Gb, Ex tb IIIC T85°C Db
Certification No. : 2020322307000620
Ambient temperature : -20 to 60°C

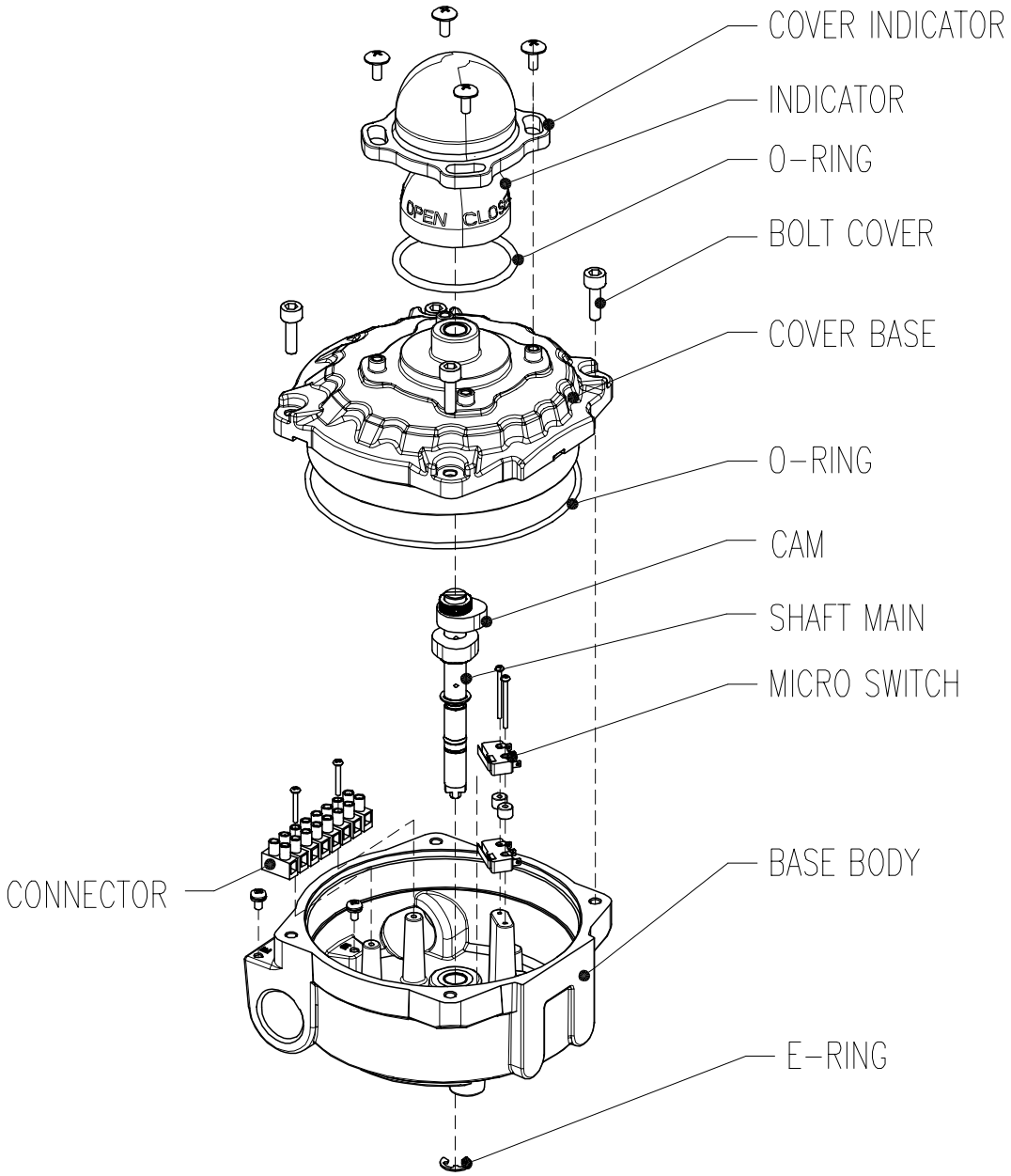
➢ CSA (Also available in USA)

Type : Explosion proof construction for internal pressure
Rating : Ex db IIC T6
Class I, Zone 1, AEx db IIC T6
Class II, Division 1, Groups E, F and G; Ex tb IIIC T85°C
Zone 21, AEx tb IIIC T85°C
Type 4, 4X ; IP67
Certification No. : 2541711
Ambient temperature : -20 to 60°C

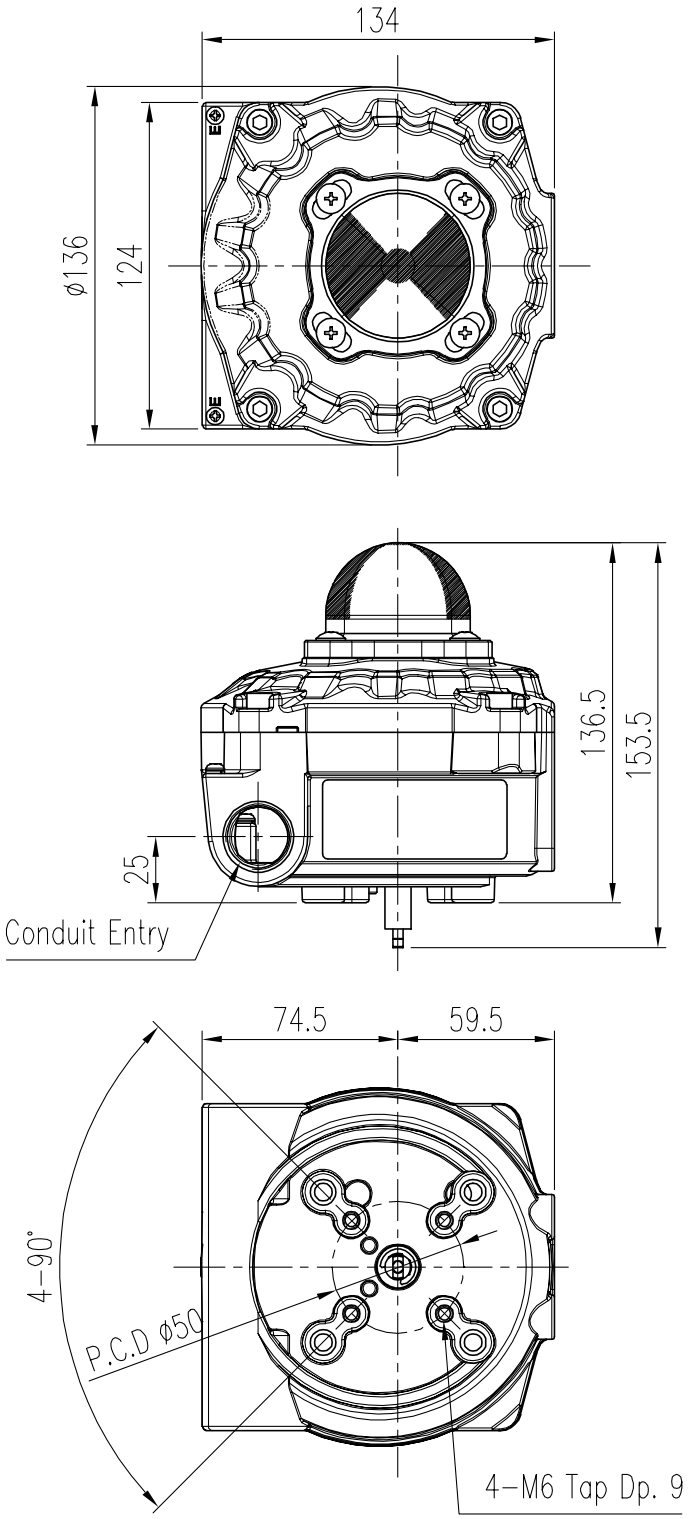
➢ Electromagnetic Compatibility (EMC)

- EMC directive 2014/30/EC from April 2016
- EC Directive for CE conformity marking

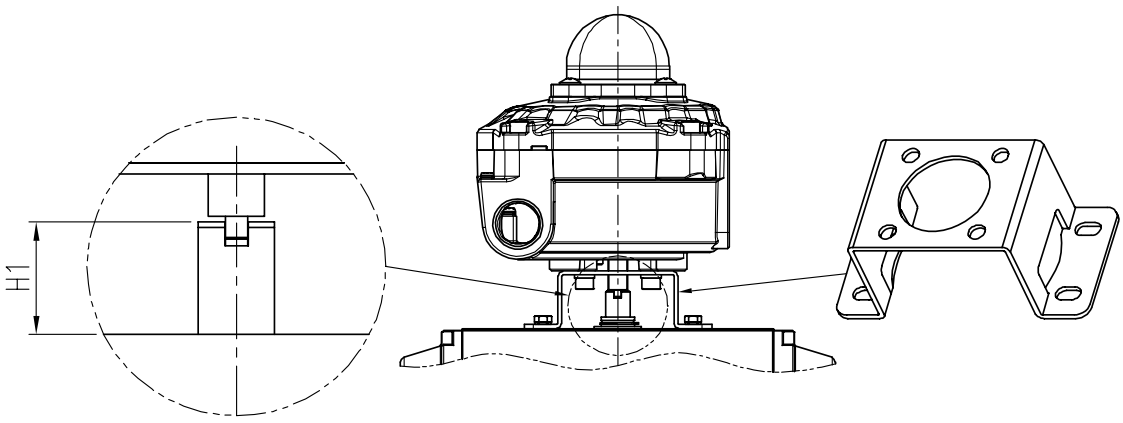
2.7 Parts and Assembly

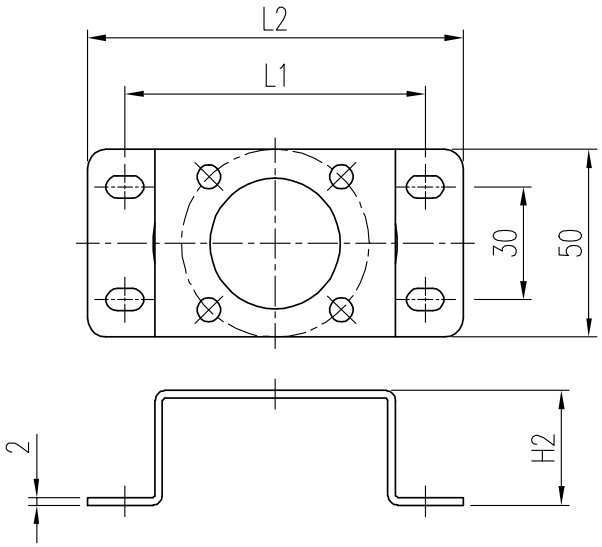


2.8 Product Dimension



2.9 Bracket Dimension





UNIT : mm

MODEL NO.	H1	H2	L1	L2	REMARK
ST-1	20	30.5	80	100	
ST-2	30	40.5			
ST-3	30	40.5	130	150	
ST-4	50	60.5			

3 Installation

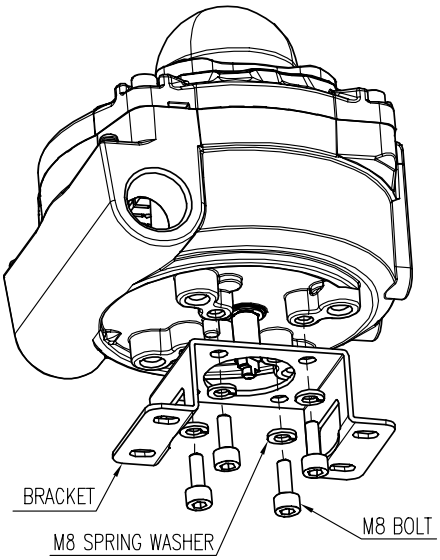
3.1 Safety

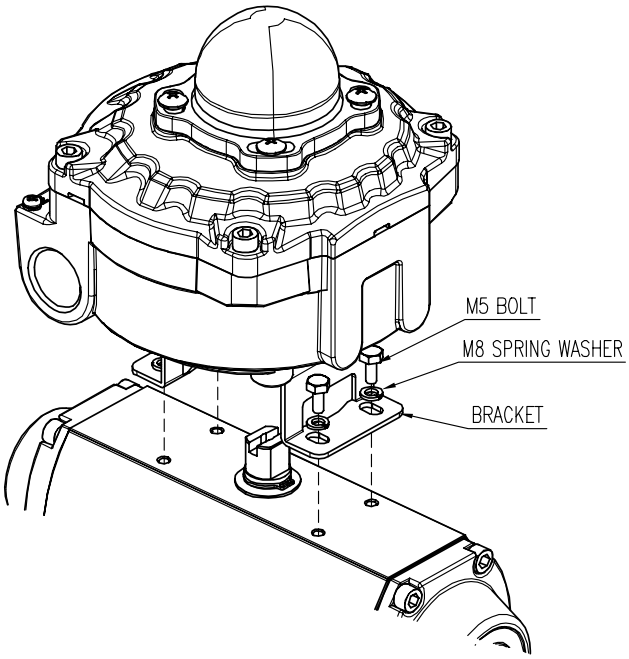
When installing the unit, please ensure to read and follow safety instructions.

- Check the unit's specification and ensure to use as specified.
- Follow other explosion proof procedures and safety precautions.
- In case of hazardous area, please ensure there is no explosion gas in the atmosphere.
- Any input or supply pressures to valve, actuator, and / or to other related devices must be turned off.
- Use bypass valve or other supportive equipment to avoid entire system "shut down".

3.2 Installation

- Assemble limit switch box body with the bracket provided.
- Align the main shaft of the limit switch box with the stem of the actuator. After the alignment, tighten the bracket onto the actuator.





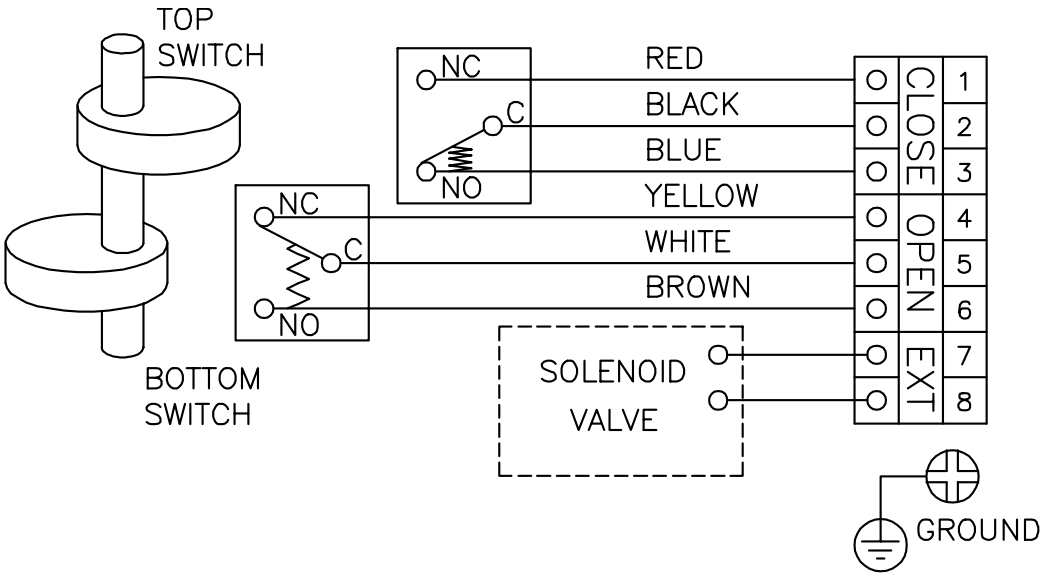
4 Connections - Power

4.1 Safety

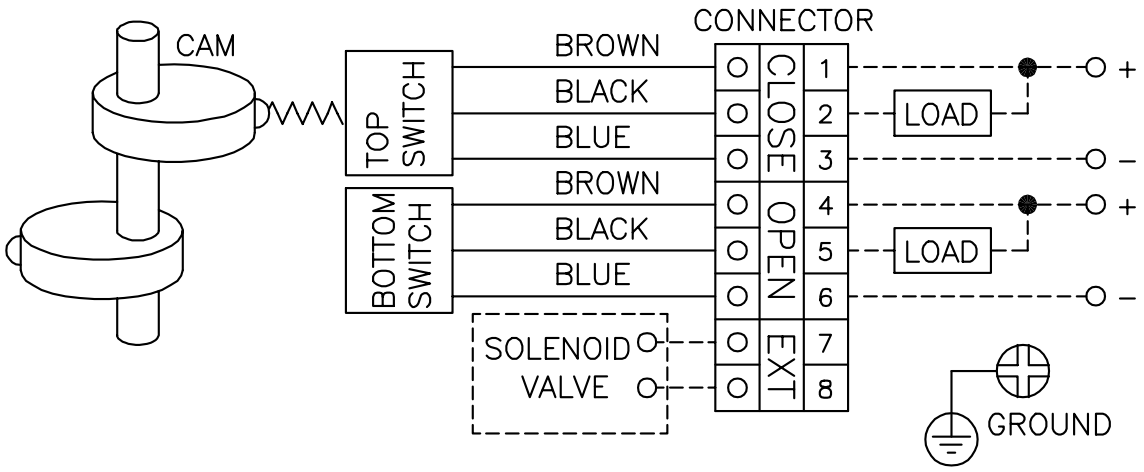
When installing a unit, please ensure to read and follow safety instructions.

- There are two conduit entries on the product. See “2.4 Product Code” for conduit entry threads.
- When installing in hazardous and explosive gas area, conduit tube or pressure-proof packing union must be used. The compound charging box should be the flameproof type and must be sealed completely.
- Before connecting terminal, ensure that the power is off completely. **Do not open the cover when the power is still alive.**
- When wiring, be careful not to apply excessive force to pull the wires to prevent from being peeled or damaged.
- In order to protect the product, it is necessary to make ground to inside and outside of the terminal
- Unused conduit openings must be protected using explosion-proof blind plugs.

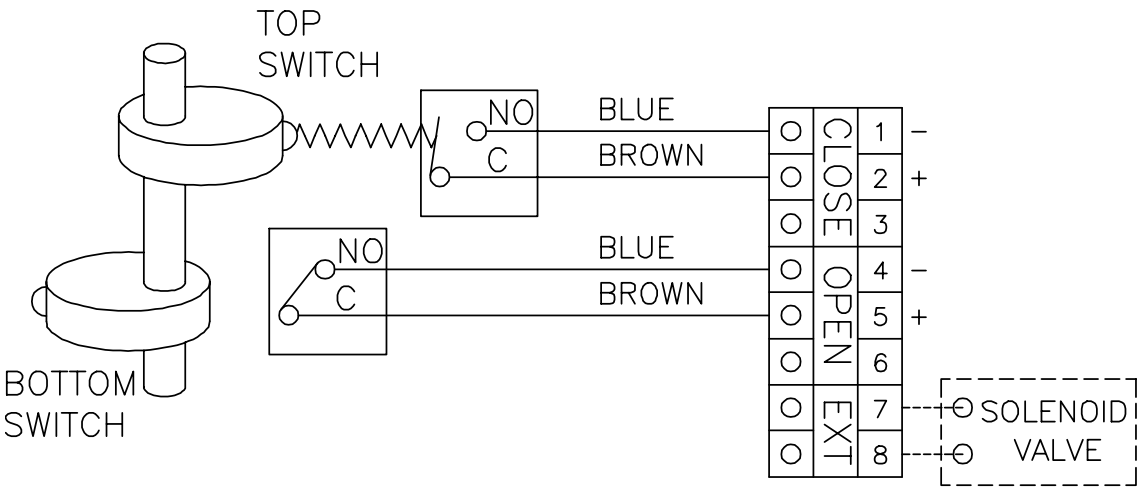
4.2 Mechanical Type (2 x SPDT)



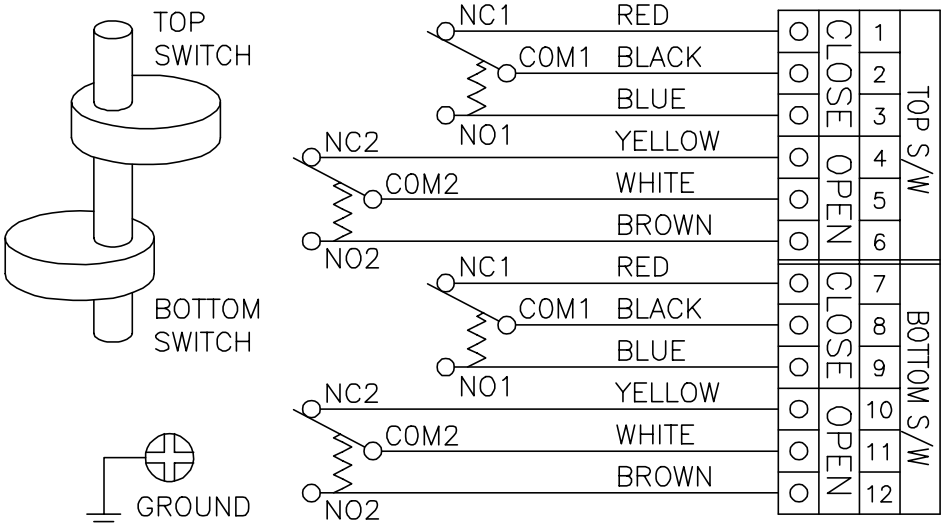
4.3 Inductive proximity sensor (x 2, Autonics, PSN17-5DNU, NPN type)



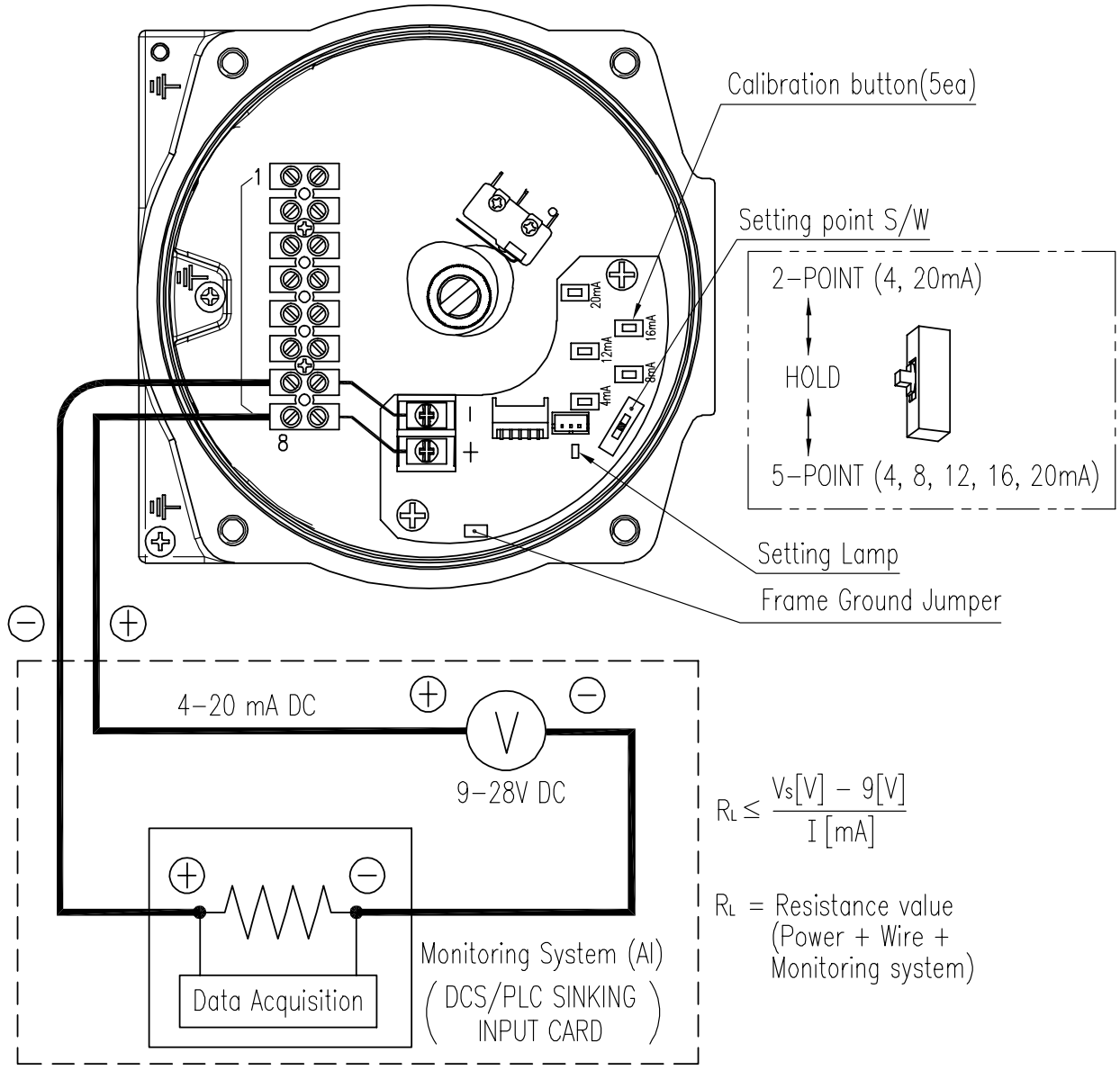
4.4 Inductive proximity sensor (x 2, P&F, NJ2-V3-N, NC type)



4.5 Mechanical Type (2 x DPDT)



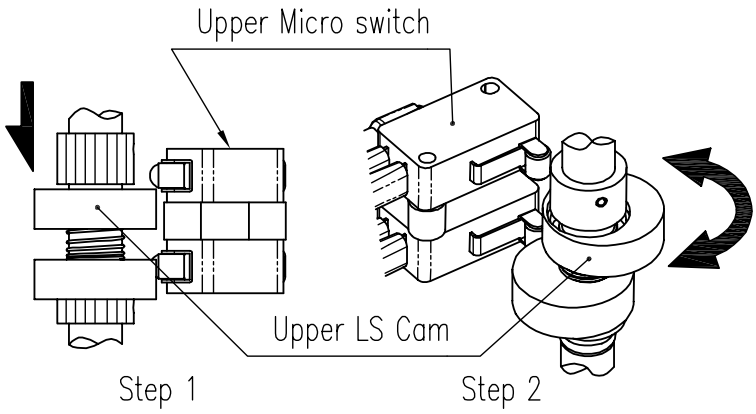
4.6 4-20 mA Analog Output option



5 Adjustments

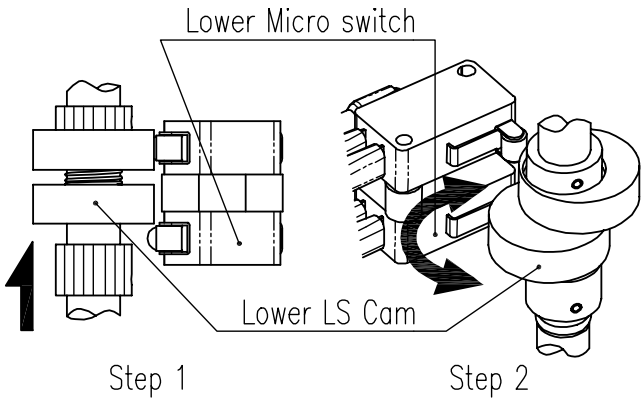
5.1 Upper Switch Adjustment

Push down upper LS cam and turn right or left to required position.



5.2 Lower Switch Adjustment

Pull up lower LS cam and turn right or left to required position.



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