

Ex Safety and Installation Instructions LS055 Anti-Two-Block Switch



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Ex Safety and Installation Instructions – LS055

SCOPE

This Ex instruction manual must be read and used by qualified personnel during system design and installation of the LS055 Anti-Two-Block Switch in potentially explosive atmospheres. These instructions are provided as an addendum to the standard product manuals.

Ex models covered:

MODEL	DESCRIPTION
LS055	Anti-Two-Block Switch

SAFETY ANALYSIS

The LS055 Anti-Two-Block Switch is considered as a “Simple Apparatus” device when used in intrinsically safe circuits. It complies with the requirements of the “Simple Apparatus” clause of standard EN 60079-11 and with the requirements for general construction of the standard EN 60079-0. It is therefore not considered as a potential source of ignition for an explosive atmosphere.

The LS055 Anti-Two-Block Switch does not fulfill the definition of “equipment” in Article 2 (1) of Directive 2014/34/EU (ATEX) as it does not contain its “own” source of ignition. The LS055 is therefore outside the scope of this Directive, and does not have a Declaration of Conformity or CE mark related to this Directive.

The complete assessment is documented in the test report “LS05 Series A2B Switch Simple Apparatus Assessment Report”

DISPOSAL

Please separate and dispose of electronic goods responsibly and follow guidelines and regulations for your region.

SPECIFICATIONS

Compliance	Temperature Classification	T4, $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +65^{\circ}\text{C}$
Physical	Dimensions	$\varnothing 50.5\text{mm} \times 199\text{mm}$ ($\varnothing \times h$)
	Weight	1.29 kg
	Material	Stainless Steel, Brass, Galvanized Steel
Environmental	Operating Temperature	-40°C to $+65^{\circ}\text{C}$ (-40°F to $+149^{\circ}\text{F}$)
	Humidity	0 to 100%

Parameters	Min	Typ	Max	Unit
Switch				
Travel Length		7.6 (0.3)		mm (in)
Electrical Characteristics	1mA 5V		100mA 30V	mA V
Weight				
LS055		1.29 (2.84)		kg (lb)
Switching weight	3.2 (7)	4.5 (10)	13.6 (30)	kg (lb)

Ex Safety and Installation Instructions – LS055

SPECIAL CONDITIONS FOR SAFE USE



The LS055 Anti-Two-Block Switch is considered as a “Simple Apparatus” device. It is suitable for use in Group IIC T4 Zone 0, Zone 1, and Zone 2 ONLY when installed with intrinsically safe circuits.



WARNING: The combined weight of the weight and chain assembly must NOT exceed 13.6 kg (30 lb).



WARNING: Following a two-block detection, the weight is lifted by the block and no longer supported by the chain. When exiting the two-block detection, the weight must be brought down at a controlled rate to limit the impact energy in the LS055 switch at the moment the chain fully extends. The downward speed of the block while the weight is descending must NEVER exceed 2.94 m/s (580 FPM). Once the weight is fully supported by the chain, the downwards speed limit does not apply.



WARNING: An effective ignition hazard is created by a mechanical impact in the LS055 switch when the weight is left to freefall over a height greater than 0.44m (1.44 feet). When the weight is lifted more than 0.44m (1.44 feet) over its resting height, the weight must always be brought down at a controlled rate.



WARNING: The crane cable must be free of defects that could cause the weight to snag on and lead to a freefall greater than the permitted maximum height.



The LS055 Anti-Two-Block Switch must be operated within its environmental limitations.



Do not use the LS055 Anti-Two-Block Switch with gases which have a lower ignition temperature than specified



The LS055 Anti-Two-Block Switch must only be installed by qualified personnel in accordance with the standards EN 60079-25 and EN 60079-14 and in accordance with any other relevant hazardous area installations standards/codes of practices.



The LS055 Anti-Two-Block Switch cannot be repaired by the end user, thus any units exhibiting a failure must be returned to the manufacturer.



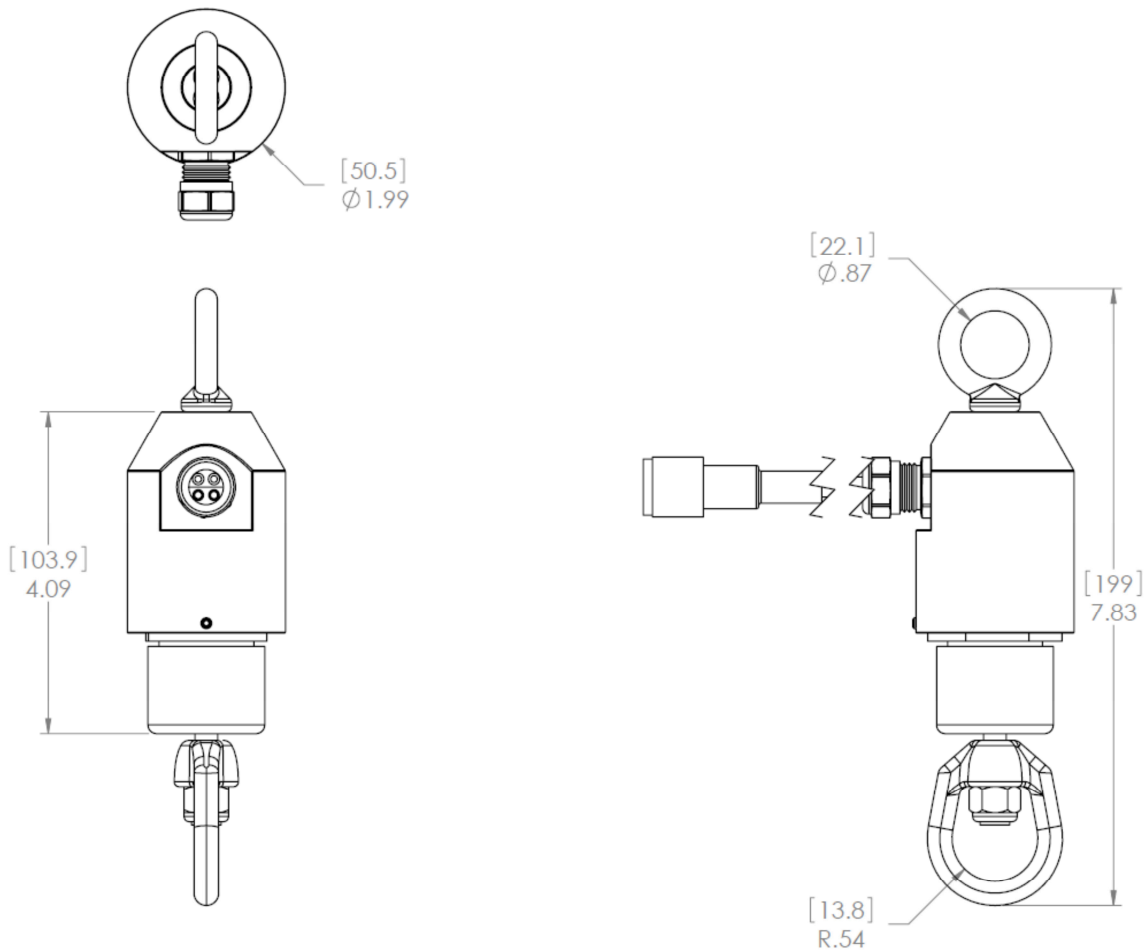
It must be considered that the LS055 Anti-Two-Block Switch can introduce an earth in the system when performing the simple intrinsically safe system assessment.



The following LS055 input parameters must be considered when assessing the simple intrinsically safe system. These parameters include the electrical characteristics of the external 6ft cable.

Pi	Ci	Li
1.15W	366pF	1.83uH

Dimensions and Installation



*Anti-two-block switch (not to scale)
Units are in inches [millimeters]*

INSTALLATION

Install the LS055 on the crane boom near the tip with a threaded chain connector. Install a weight and chain assembly to the bottom eye bolt. The weight and chain assembly can either be purchased from LSI or the original assembly supplied with the crane may be used. (The maximum total weight of the weight and chain assembly supported by the LS055 anti-two-block switch is 30 lb.). The LS055 Anti-Two-Block Switch is intended to be mounted outdoors.



WARNING: The weight and chain may present additional ignition hazards depending on the materials used in their construction and their surrounding environment. All possible hazards must be considered when selecting and installing the weight and chain assembly and the installation must always be performed in accordance to the relevant international installation standards.

Ex Safety and Installation Instructions – LS055

INSTALLATION CONTROL DRAWING

Hazardous Area	Hazardous Area	Safe Area
<p>Ex ia IIC T4 -20°C < Tamb < +75°C</p> <p>Sira 14ATEX2332X</p>  <p>GS005 A2B Transmitter</p> <p>IIC T4 -40°C < Tamb < +65°C Simple Apparatus</p>  <p>LS055 A2B Switch</p>	<p>Ex d IIB T4 -30°C < Tamb < 60°C</p> <p>TRAC12ATEX0040X</p>  <p>GS820-10</p>	<p>n/a</p>   
<p>Notes:</p> <ol style="list-style-type: none"> 1) Operating temperature range -20°C < Tamb < +75°C for the transmitter and -40°C < Tamb < +65°C for the switch 2) Installation and maintenance must only be done by competent personnel 3) Battery replacement shall only be accomplished if no explosive gas may be present 4) Installation shall be in accordance with 60079-14, 60079-25, and other local regulations as may be required 5) Dissimilar metal contact should be avoided. 	<p>Notes:</p> <ol style="list-style-type: none"> 1) Operating temperature range -30°C < Tamb < +60°C 2) See Installation Instruction GM820-10&11_rev1_20120902 3) Installation and maintenance must only be done by competent personnel 4) GS820-xx must be returned to factory for service 5) Installation shall be in accordance with 60079.14 and other local regulations as may be required I 6) Dissimilar metal contact should be avoided. 	<p>Notes:</p> <ol style="list-style-type: none"> 1) Operating temperature range -30°C < Tamb < +60°C 2) Installation and maintenance must only be done by competent personnel 3) Installation shall be in accordance local regulations as may be required 4) Dissimilar metal contact should be avoided.

Document Revision History

Revision History

Rev	Date	Description	Approved
1	2015-03-23	Draft Release.	M. Chouinard, Eng.
2	2016-04-21	Complete revision of document.	M. Chouinard, Eng.
3	2016-05-18	Revised cable electrical parameters	M. Chouinard, Eng.

Any changes to this document must be approved by the Hazardous Area Systems Manager