



## Features / Design

- 1.- Solid and flexible design.
- 2.- Aluminium die-casting housing and polyester powder coating.
- 3.- Quick-set cam.
- 4.- Visual dome position indicator.
- 5.- **Spring loaded splined cam.**  
No adjustment required after the initial setting.  
Easy setting without tool.
- 6.- Dual cable entries.
- 7.- **Captive cover bolts (LSB-5, LSB-7, LSB-8).**  
Designed to prevent from losing them.
- 8.- Easy mounting bracket.
- 9.- NAMUR standard stainless steel shaft and bracket.

## Description

Providing accurate and reliable valve position monitoring, the LSB Series limit switch boxes are designed for quarter turn valve applications (0° to 90°) used in many industries:

- Chemical & petrochemical.
- Municipal wastewater.
- Power plant.
- Oil refinery.
- Marine.
- General industry.

A wide range of product with many switch and other accessory options cover various customer needs: cost-effective, corrosive / hostile environments, enclosure standards (IP67, IP68, NEMA 4, 4X, 6, flame-proof, intrinsic safety), higher/ lower operating temperature, multiple cable entries, 3-way or 5-way valve applications, current position signal-ing, solenoid valve, and many more.

The housings of standard LSB Series are die cast aluminium. To provide high corrosion resistance, they are chromate coated and polyester powder coating is further applied. The housing of LSB-5 is available in either aluminium die cast, 316 stainless steel, or 316L stainless steel.

With Pre-wired switches and pre-set cams allow quick and easy installation. LSB Series has spring loaded splined cams which can be adjusted without requiring any tools. Once the initial setting has been done, there is no need for further adjustment. Also, a full line of NAMUR standard mounting brackets are available for all LSB Series.



LSB-2



LSB-3



LSB-4



LSB-5



LSB-7



LSB-8

## Standard Specification

	MODEL	LSB-2	LSB-3	LSB-4	LSB-5	LSB-7	LSB-8
Enclosure	Material	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
	IP rating	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
	NEMA rating	NEMA 4, 4X	NEMA 4, 4X	NEMA 4, 4X, 6	NEMA 4, 4X, 6	-	-
Certified	ATEX, IECEx	-	-	Ex d IIB T6 Gb	Ex d IIB T6	Ex d IIC T5	Ex d IIC T6
	CSA	-	-	Cl.1, Div.1, Gr.C,D	Cl.1, Div.1, Gr. B, C, D	-	-
	EAC	-	General purpose	1 Ex d IIB T6 Gb X	1 Ex d IIB T6 Gb X	-	-
	NEPSI	-	-	-	Ex d IIC T6 Gb	-	-
Cable entries	2 x NPT1/2"	2 x NPT1/2"	2 x NPT3/4"	2 x NPT3/4"	3 x NPT3/4"	4 x NPT3/4"	
Ambient temp.	-20 to +80 °C	-20 to +80 °C	-20 to +80 °C / -20 to +60 °C (flame proof)	-20 to +80 °C / -20 to +60 °C (flame proof)	-20 to +80 °C / -20 to +60 °C (flame proof)	-20 to +80 °C / -20 to +60 °C (flame proof)	
Terminal strips (0.08 - 2.5 mm2)	8 points	8 points	8 points	8 points	8 points	8 points	
Position indicator (0° - 90°)	Open: yellow, Close: red	Open: yellow, Close: red	Open: yellow, Close: red	Open: yellow, Close: red	Open: yellow, Close: red	Open: yellow, Close: red	
Switches	2 x mechanical switch / 2 x proximity sensor	2 x mechanical switch / 2 x proximity sensor	2 x mechanical switch / 2 x proximity sensor	2 x mechanical switch / 2 x proximity sensor	2 x mechanical switch / 2 x proximity sensor	2 x mechanical switch / 2 x proximity sensor	
Coating	Chromate, polyester powder coating	Chromate, polyester powder coating	Chromate, polyester powder coating	Chromate, polyester powder coating	Chromate, polyester powder coating	Chromate, polyester powder coating	
Color	Black	Black	Black	Black	Black	Black	

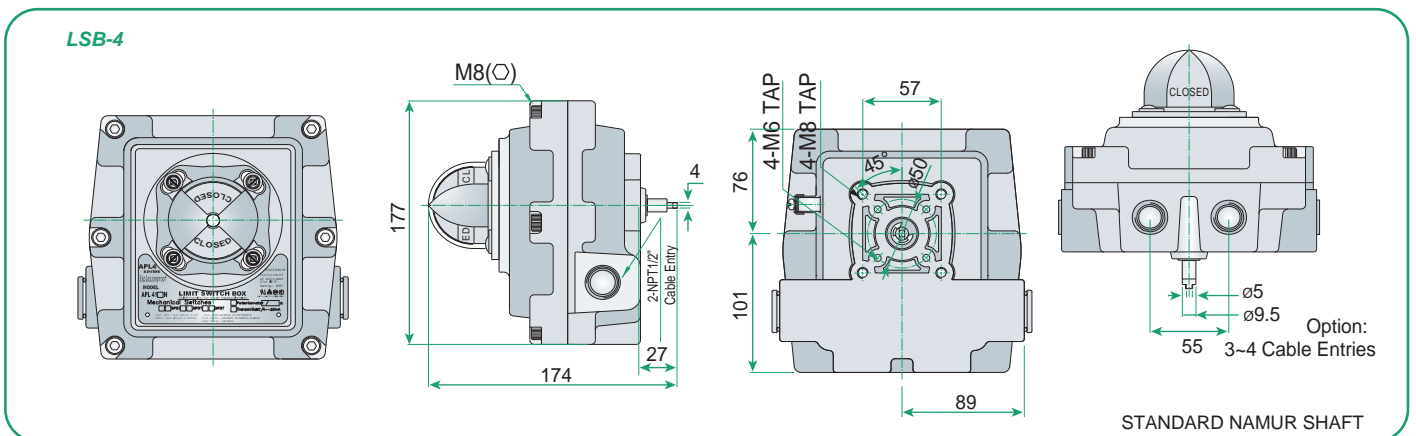
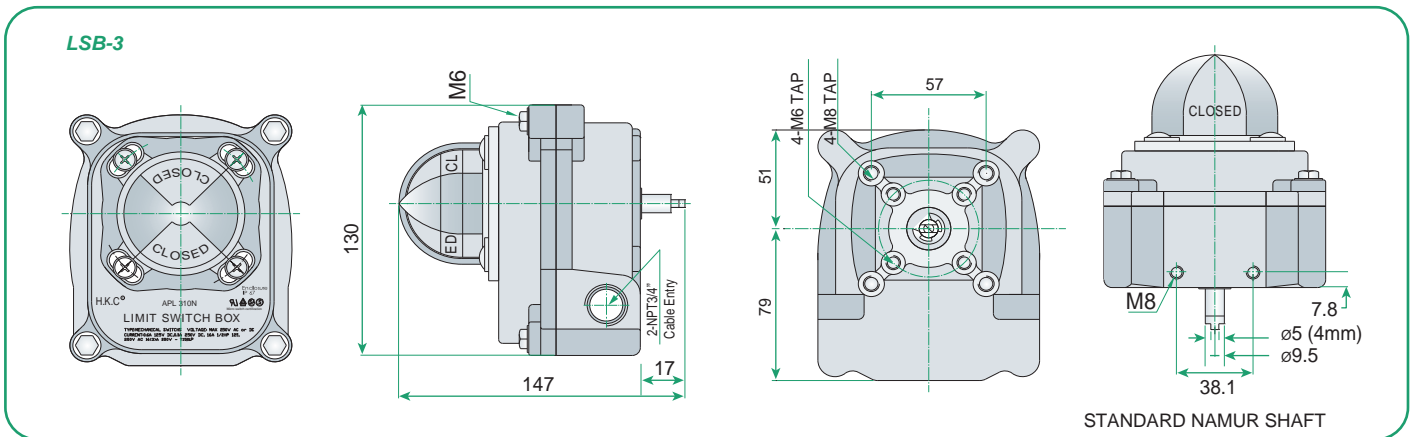
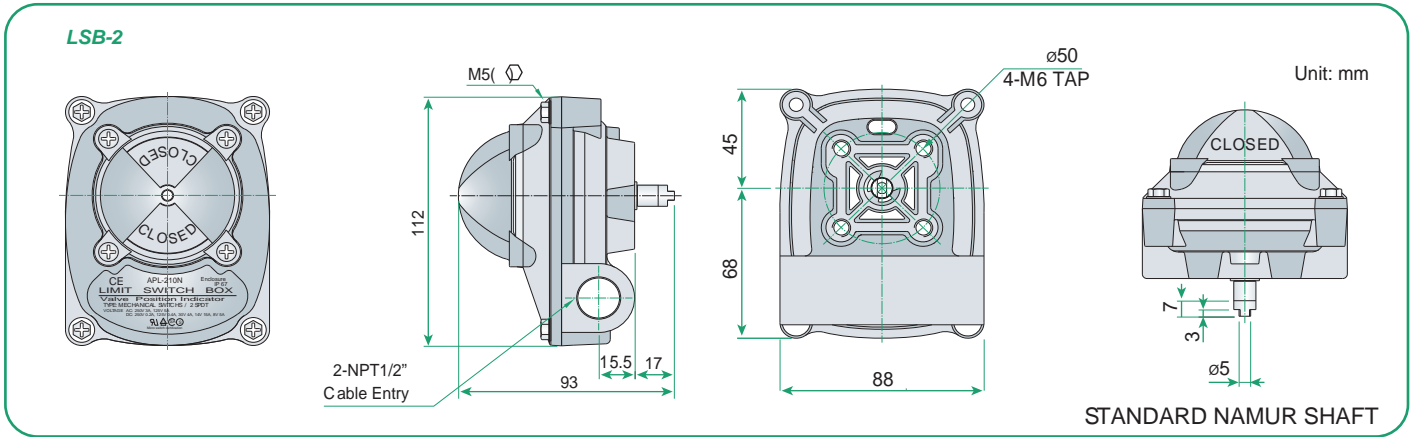


## Optional Specification

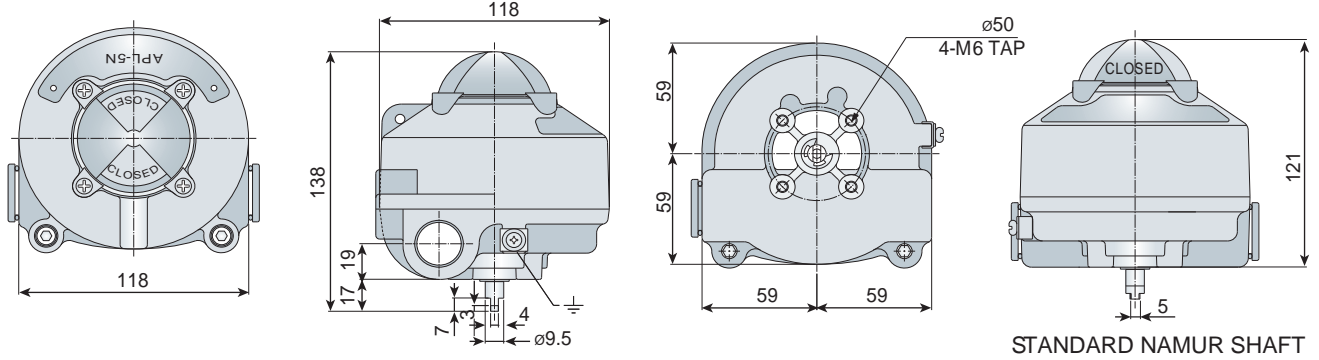
	MODEL	LSB-2	LSB-3	LSB-4	LSB-5	LSB-7	LSB-8
Enclosure	Material	-	-	-	316 stainless steel / 316L stainless steel	-	-
	IP rating	IP 68	IP 68	IP 68	IP 68	IP 68	IP 68
Explosion Proof	ATEX, IECEx	-	-	-	Ex ia IIC T6 / Ex tb IIIC T85°C IP67	-	-
Cable entries	2 x (PF1/2", PT1/2", M20, PG13.5)	2 x (PF1/2", PT1/2", M20, PG13.5)	2 or 4 x (PF3/4", PT3/4", M20, M25)	2 x (PF3/4", PT3/4", M20, M25)	3 x (PF3/4", PT3/4", M20, M25)	3 x (PF3/4", PT3/4", M20, M25)	
Ambient temp.	-	-40 to +80 °C (low) -20 to +150 °C (high)	-40 to +80 °C (low)	APL-52X : -25~60°C -53X : -40~60°C -5HX : -50~60°C	-	-	
Terminal strips (0.08 - 2.5 mm2)	-	16 points	20 points	-	-	-	
Position indicator	Three positions close: red / open: green	Three positions close: red / open: green	Three positions close: red / open: green	Three positions close: red / open: green	Three positions close: red / open: green	Three positions close: red / open: green	
Switches	-	4 x mechanical switch / 4 x proximity sensor	4 x mechanical switch / 4 x proximity sensor	4 x mechanical switch / 4 x proximity sensor	4 x mechanical switch / 4 x proximity sensor	4 x mechanical switch / 4 x proximity sensor	
Potentiometer	-	1 kΩ (standard) 5 kΩ, 0-10 kΩ	1 kΩ (standard) 5 kΩ, 0-10 kΩ	1 kΩ (standard) 5 kΩ, 0-10 kΩ	1 kΩ (standard) 5 kΩ, 0-10 kΩ	1 kΩ (standard) 5 kΩ, 0-10 kΩ	
Current output signal unit	-	4-20 mA dc 12.5-37 V dc (24 V typical)	4-20 mA dc 12.5-37 V dc (24 V typical)	4-20 mA dc 12.5-37 V dc (24 V typical)	4-20 mA dc 12.5-37 V dc (24 V typical)	4-20 mA dc 12.5-37 V dc (24 V typical)	
Coating	Additional nano coating	Additional nano coating	Additional nano coating	Additional nano coating	Additional nano coating	Additional nano coating	
Color	Red, green, blue, yellow, silver	Red, green, blue, yellow, silver	Red, green, blue, yellow, silver	Red, green, blue, yellow, silver	Red, green, blue, yellow, silver	Red, green, blue, yellow, silver	

\*Note: LSB-4 with more than 2 cable entries does not support explosion proof function.

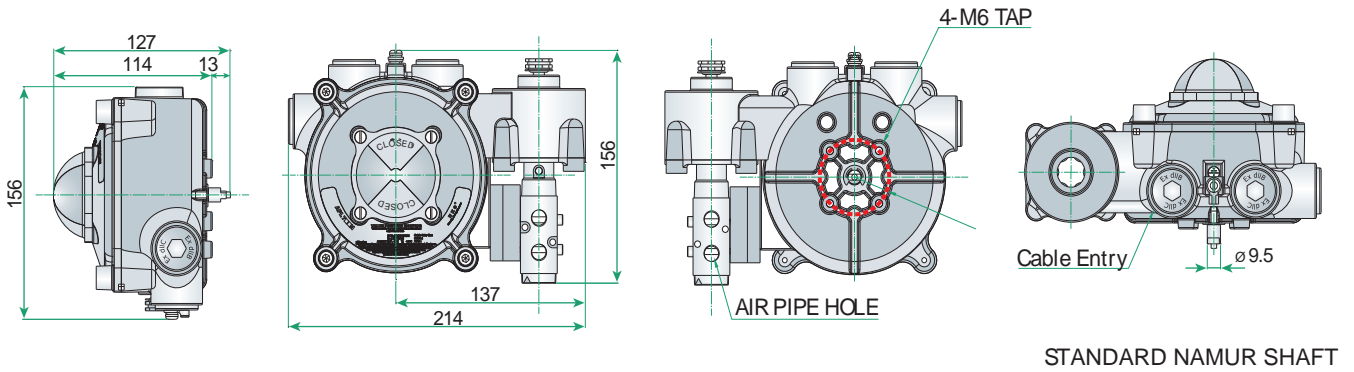
## Dimensions (mm)



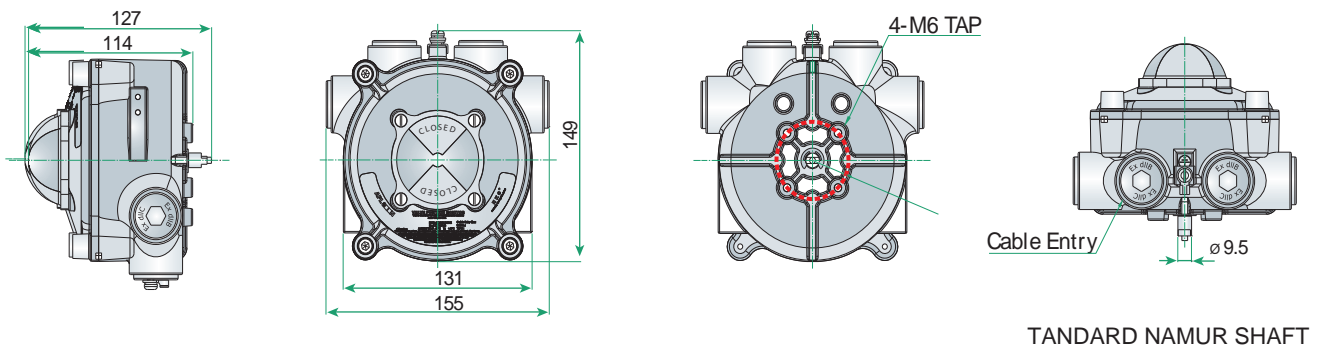
### LSB-5



### LSB-7



### LSB-8





## Switch Specification

### MECHANICAL SWITCH



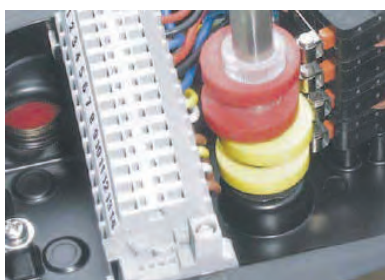
**Standard switches**

- 2 x SPDT switches.
- Contact arrangement: 125,250 V ac 16 A, 250 V dc 0.3 A, 125,250 V ac 0.6 A, 1/2 HP. Operating frequency.
- - Max. 600 operations/min (mechanical).
- Max. 60 operations/min (electrical).



**Optional switches**

- 3 x SPDT switches
- Contact arrangement: 125,250 V ac 16 A, 250 V dc 0.3 A, 125 V dc 0.6 A, 125,250 V ac 1/2 HP
- Except LSB-2**



**Optional switches**

- 4 x SPDT switches
- Contact arrangement: 125,250 V ac 16 A, 250 V dc 0.3 A, 125 V dc 0.6 A, 125,250 V ac 1/2 HP
- Except LSB-2**



**Optional switches**

- 2 x DPDT switches
- Contact arrangement: 125/250 V ac 16 A, 1 HP 125 V ac, 2 HP 250 V ac, 250 V dc 0.5 A
- Except LSB-2**

### PROXIMITY SENSOR



**NJ2-V3-N P & F (intrinsically safe)**

- Inductive proximity sensor
- Voltage range: 8 V dc
- Sensing range: 2 mm
- Ambient temperature : -25 to +60°C



**PS17-5DNU**

- Inductive proximity sensor
- Voltage range: 10~30 V dc
- Sensing range: 5 mm
- Except LSB-2**

## Switch Specification

### PROXIMITY SENSOR



#### Optional sensor

- NBB2-V3-E2/E3(PNP): 10~30 V dc
- NBB2-V3-E0(NPN): 10~30 V dc
- NBB2-V3-Z4/Z5: 5~60 V d
- Ambient temperature : -25 to + 60°C
- APL 4 Proximity sensor:**
- NJ2-12GM-40-E2: 10~60 V dc
- NJ4-12GM-40-E2: 10~60 V dc
- NBB2-12GM-40: 6~60 V dc
- Except LSB-2, 3, 5, 7, 8**

### PROXIMITY REED SENSOR



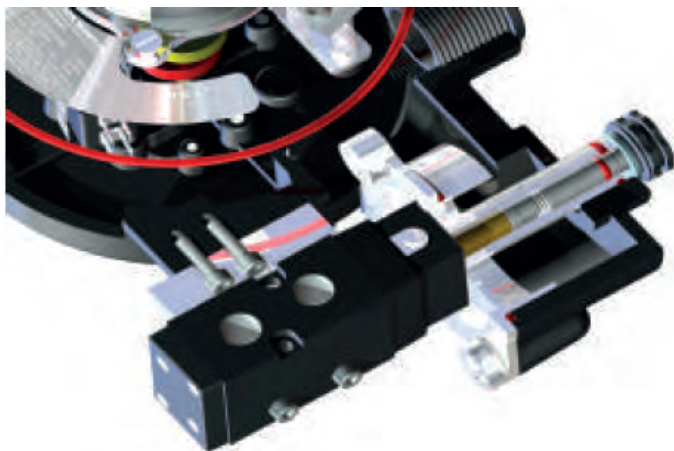
#### 2 x SPST switches

- Contact form: NO. NC
- Contact rating: 10 W Max.
- Switching voltage: 200 V dc Max.
- Switching current: 1 A Max.
- Breakdown voltage: 250 V dc Min.
- Contact resistance (initial): 0.3 Ω Max.
- Electrical life: 10<sup>7</sup>  
(6 V dc, 10 mA)
- MK 21 (APL-53X)  
Ambient temperature : -40 to +60°C
- Honey well 11/12/13 SX (APL-5HX)
- Ambient temperature: -50 to 60°C

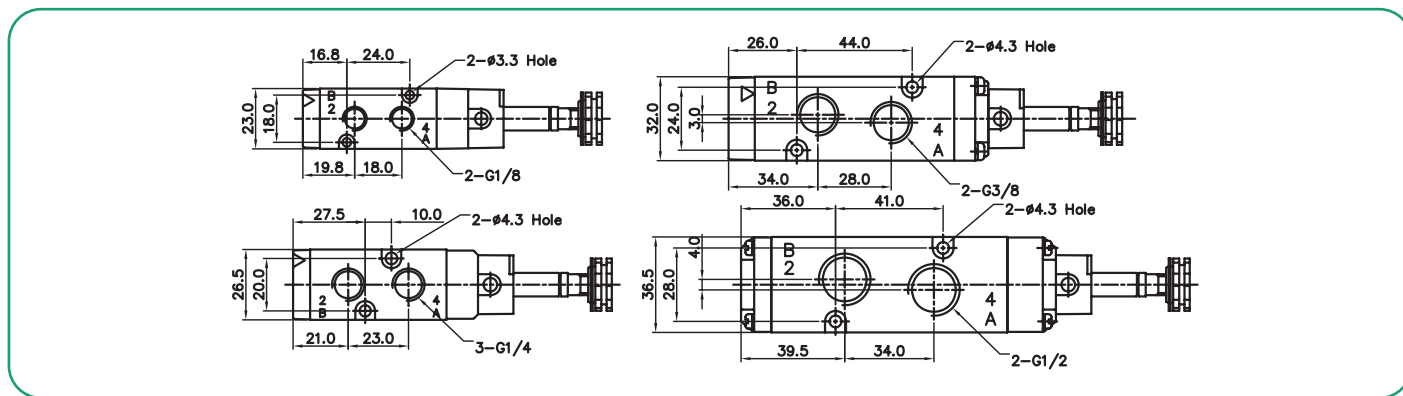
#### 2 x SPDT switches

- Contact form: NO. NC
- Contact rating: 5 W Max.
- Switching voltage: 175 V dc Max.
- Switching current: 0.25 A Max.  
(option : 1.5 A Max @60 V dc Max.)
- Breakdown voltage: 200 V dc Min.
- Contact resistance (initial): 0.3 Ω Max.
- Electrical life: 10<sup>7</sup> (12 V dc, 10 mA)

## LSB-7 Single Coil Solenoid Valve



Operating pressure	1.5 to 10 bar
Valve material	Aluminium
Seal	NBR
Ambient temp.	+5 to +60 °C
Coil voltage	ac 110 V, ac 220 V, dc 24 V



## Bracket (NAMUR Standard)

	BRACKET (NAMUR STANDARD)	BRACKET (OPTIONAL)	
<b>Shape</b>			
<b>Model (size)</b>	MBP-50 (25 X 50 H : 20) MBP-100 (30 X 80 H : 20) MBP-200 (30 X 80 H : 30) MBP-300 (30 X 130 H : 30) MBP-400 (30 X 130 H : 50)	MB-P-O-1C (30 X 80 H : 20) MB-P-O-1S (30 X 80 H : 20) MB-P-O-2C (30 X 80 H : 30) MB-P-O-2S (30 X 80 H : 30)	MB-P-O-3C (30 X 130 H : 30) MB-P-O-3S (30 X 130 H : 30) MB-P-O-4C (30 X 130 H : 50) MB-P-O-4S (30 X 130 H : 50)

## How to Order

# LSB - G 2 10 N MK051301

LSB = Limit Switch Box

### Model (Enclosure type)

**LSB - G** = Limit Switch Box Standard - General Purposes

**LSB - X** = Limit Switch Box Flame Proof

**LSB - I** = Limit Switch Box Intrinsically <sup>(1)</sup>

- 2 : Standard (IP67, NEMA 4X) - **LSBG / LSBI**<sup>(1)</sup>
- 3 : Standard (IP67, NEMA 4X) - **LSBG**
- 4 : Flame proof (Ex d IIB T6, Cl.1, Div.1, Gr.C-D, IP67, NEMA 4, 4X, 6) - **LSBX**
- 5 : Flame proof (Ex d IIC T6, Cl.1, Div.1, Gr.B-D, IP67, NEMA 4, 4X, 6),  
Dust ignition proof (Ex tb IIIC T85°C) - **LSBX**
- With proximity sensor (option) - Intrinsic safety (Ex ia IIC T6) : LSB-520 only - **LSBI**
- 6 : Flame proof (Ex d IIC T5) with solenoid valve and 3 cable entries - **LSBX**

### Switch Type

#### Mechanical switch

- 10 : 2 - SPDT
- 11 : 3 - SPDT
- 12 : 4 - SPDT
- 13 : 2 - SPST
- 14 : 2 - DPDT
- 15 : 2 - SPDT + Potentiometer
- 16 : 2 - SPDT + Signal unit (4~20 mA)

#### Proximity sensor

- 20 : P&F. NJ2-V3-N(-25 ~ +60°C)
- 21 : Autonics. PS17-5DNU
- 22 : P&F. NJ4-12GM-N(-25 ~ +60°C)
- 23 : P&F. NBB2-V3(-25 ~ +60°C)
- 25 : P&F. NJ2-V3-N + Potentiometer (-25 ~ +60°C)
- 26 : P&F. NJ2-V3-N + Signal unit (4 ~ 20 mA)(-25 ~ +60°C)

#### Reed type proximity sensor

- 30 : MS-B 301
- 43X : (CSA, MK21, -20 ~ 60°C)
- 53X : (CSA, MK21, -40 ~ 60°C)

#### Low temperature sensor

- 5HX : (CSA, Honeywell, -50~+60°C)

### Enclosure Material

N : Aluminum alloy

S : Stainless steel  
(APL-5 only)

### Bracket Type

- MK051301 : MBP-100 (30 X 80 H : 30)
- MK351501 : MBP-200 (30 X 80 H : 40)
- MK8481165 : MBP-300 (30 X 130 H : 40)
- MK551701 : MBP-400 (30 X 130 H : 60)

#### NOTES:

- (1) General Purposes Enclosure may be combined with an intrinsically safe proximity sensor:  
20 : P&F. NJ2-V3-N(-25 ~ +60°C), in order to have an intrinsically safe grade depending on the sensor only.