



Compiled/Updated	LL
Approved	CD
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Amendment	A2

Product Data Sheet - LINEZEBRA

Helps prevent bird collisions with transmission and distribution power lines + provides a visual warning for plant and equipment working near power lines.

Key Features:

- When installing from the ground, a special quick release tool can be attached to industry standard telescopic hot sticks, for fast and efficient installation and removal from line.
- Compatible with Shotgun sticks.
- Lab based slip tests prove better performance than alternate products on the market.
- Duration tested to 100mph.
- Fatigue tested to over 5 million cycles.
- High internal contrast with independent fingers or streamers that flutter with a breeze.
- High-vis reflectors.
- Range taking clamp fits most powerline conductors.
- Installable via drone (coming soon).

Figure 1 BD-SC-1Z-BW-BE

Suitable for powerline warning for birds



Figure 2 BD-SC-1Z-OW-BE

Suitable for powerline warning around construction sites

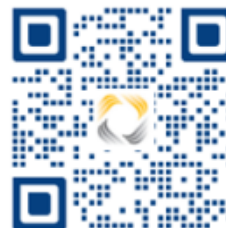


Figure 3 BD-SC-1Z-RW-BE

Red & white colour pattern associated with aviation warning



Scan for instructions



Part description:

BIRDFLAPPA
 BD-SC-1K-GID-BE
LINEZEBRA
 BD-SC-1Z-XX-BE
FLAGMARKA
 WM-SC-1J-O-BE



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Part No. Table (A)

Part No.	Description
BD-SC-1Z-BW-BE	LINEZEBRA Spring Clamp with 2 Black and 4 White Streamers BE version*
BD-SC-1Z-RW-BE	LINEZEBRA Spring Clamp with 4 Red and 2 White Streamers BE version *
BD-SC-1Z-OW-BE	LINEZEBRA Spring Clamp with 4 Orange and 2 White Streamers BE version *

*Other colour streamers are available based on the requested MOQ.

Dimensions Table (B)

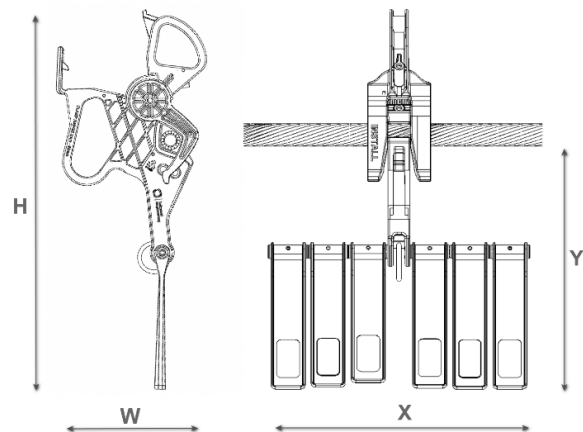
X	Y	W	H	Clamp Closes To*	Clamp Opens To*	Weight
9" 230mm	10" 250mm	6.7" 170mm	15.8" 400mm	5/64" 2mm	2" 50mm	13.8 oz 390 g
<p>X = The width of the Streamers Y = Drop from conductor when installed as depicted adjacent</p>						

*Suitability of the conductor is subject to the engineering requirements of the asset owner.

Note: Any dimensions or weights figures are estimates only.

Materials Table (C)

Components	Material
Clamps, Streamers	UV Nylon 6, V-2 Grade
Cylinder	UV Nylon 6, V-0 Grade
Soft Jaws	UV TPE, V-0 Grade
Hinge Pin	Brass
Tension Spring, Spring Pin, Streamer Tube and O-Ring	Stainless Steel
Reflector*	3M Diamond Grade Reflective Sheeting



* Please note only 4 reflectors are attached per unit.



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Spacing

The general recommendation is to space the devices 15ft to 30ft or 5 meters to 10 metres apart, please refer to our LINEZEBRA Instruction Sheet for more detailed information. This recommendation is subject to the requirements of the asset owner and dependent on environmental conditions and the specific application.

Ratings Table (D)

1	Withstand voltage test IEC 60060-1:2010, AS 1931.1-1996, AS 2225-1994	No flash over occurred up to an equivalent of 178kV Ø-Ø ^(c)	2	Slip test (load when device started to slip) IEC 61897-2020 test method	32.6 lb ^(e) 145 N ^(e)
	3	Salt spray corrosion test ISO 9227, ISO 10289		Brass = 7 - 8 Stainless Steel = 10	4
5		Testing of clamp assembly on 247°F/120°C heated rod for 1h	No adverse functional effect on unit	6	
	7	Testing of clamp assembly to - 31°F/-35°C IEEE 1656-2010	No adverse functional effect on unit		8
9		Max. projected area of the unit in a single plane	~54.4inches ² ~35,096mm ²	10	



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11	Max. horizontal visible area of reflective element surface area	~2.3inches ² ~1454.5mm ²	12	UV aging test of Clamps (same material of Streamers) 1000 hours ISO 4892-3, ASTM D 638, ISO 4582	Changes in colour (Colour Fastness Grading): 4 Changes in other appearance properties: Slight
13	Ozone resistance of Clamps and Streamers Material 1000 hours	No visual signs of damage ^(d)	14	Michelson contrast (BD-SC-1Z-BW)	≈ 0.991 ⁽ⁱ⁾
15	Streamers swing fatigue test over 5 million cycles	No adverse functional effect on unit ⁽ⁱ⁾	16	Ice loading effect on 22mm conductor EN 50341-2-4:2016	0.65% increase at 10m spacing ⁽ⁱ⁾

- (a) Results obtained by extrapolating the torsion spring torque test on different size conductors.
- (b) Results obtained from material data sheet and may vary depending on supplier.
- (c) Results obtained from standardised indoor lab tests performed on the similar product BIRDFLAPPA.
- (d) Results obtained from standardised indoor lab tests performed on the material specimens.
- (e) Results obtained from standardised indoor lab tests performed on the same Spring Clamp tested on Ø21.6mm OD ASCR conductor.
- (f) Results obtained from the 3M Reflective Sheeting Datasheet. Same series of sheeting specimens passed ASTM E162 Flame Spread test.
- (g) Results obtained from the device performance conducted in a leading Australian University Wind Tunnel Test lab.
- (h) The Line load is inclusive of the device weight; it's calculated based on the given Coefficient of Drag and the maximum projected area of the device at different wind speed. The actual value may vary depending on the state of the device at different wind speeds.
- (i) Results obtained from Balmoral inhouse test.

The data herein is an indication of product capabilities in known predetermined lab conditions and actual outdoor environments may vary.

Where stated, "unit" refers to a LINEZEBRA device.

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