

**AMETEK**<sup>®</sup>  
**PATRIOT SENSORS**

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Series 955S  
**Gemco Smart Brik**<sup>™</sup>  
Linear Displacement Transducer



Installation and  
Programming Manual

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# Product Information

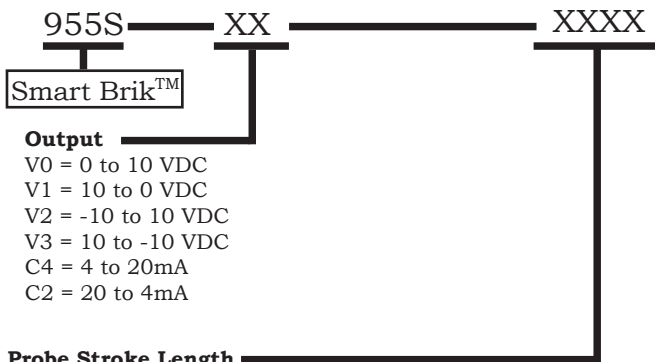
## Gemco Series 955S Smart Brik

The 955S Smart Brik is an accurate programmable, auto-tuning, non-contact, linear displacement transducer in an economical, low profile package. The transducer utilizes our field proven magnetostrictive technology to give absolute position, repeatable to .01% of the programmable sensing distance. The streamlined anodized aluminum extrusion houses the sensing element and electronics. The magnet moves over the sensing element that determines the position and converts it to an analog output. It can be ordered with a 0 to 10 VDC, -10 to 10 VDC, or 4 to 20mA output.

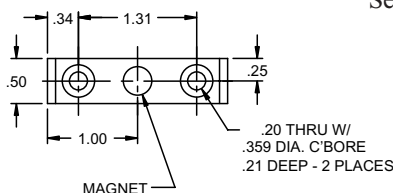
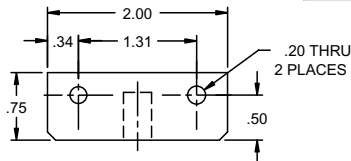
The 955S Smart Brik has a few truly unique features. The first one being the LDT's auto-tuning capability, the ability to sense a magnet other than the standard slide magnet and adjust its signal strength accordingly. Another feature is the analog output is programmable over the entire active stroke length. The active stroke area of the LDT lies between the Null and Dead zones.

There is a diagnostic LED located at the connector end of the probe that remains green while a good magnet signal is present and when the magnet is in the programmed stroke area. The LED turns yellow when the magnet is out of the programmed active range, but still within the active stroke area. The LED turns red and the output goes to 0 volts on voltage output units, or 4mA on current output units when there is no magnet present or when the magnet is out of the sensing area. The unit can easily be changed in the field from a 0 - 10VDC to a 10 - 0VDC, 4 - 20mA to a 20 - 4mA or -10 to 10VDC to a 10 to -10VDC.

Reference Specifications	
Input Voltage	10 - 30 VDC
Current Draw	Voltage Units 80mA max @ 10VDC
	Current Units 90mA max @ 10VDC 35mA max @ 30VDC 55mA max @ 30VDC
Output	0 to 10 VDC 10 to 0 VDC -10 to 10 VDC 10 to -10 VDC 4 to 20mA 20 to 4mA
Linearity	+/- 0.05% of stroke or +/- 0.028", whichever is greater
Accuracy	+/- 0.1% of stroke or +/- 0.050", whichever is greater
Repeatability	+/- 0.01% of full stroke or +/- 0.014", whichever is greater
Operating Temperature	-20° to 70° C
Span Length	6" to 140"
Null Zone	3.00"
Dead Zone	1.50"
LED	Green = Power is applied and magnet is present Red = Fault, magnet is in the Dead Zone or lost Yellow = Out of the active programmed range
Connector	Standard 4 pin micro 12mm Euro connector
Agency Approvals	CE Approved
Enclosure	IP 67
Response Time	50" or less 50" or greater
	1 mS updates with 5 mS settling time 2 mS updates with 4 mS settling time



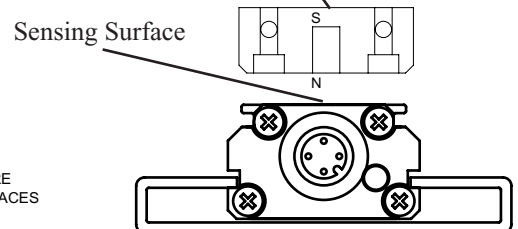
Insert stroke in inches to 0.1 inch. Enter as a four-place number. Valid lengths are 0060 to 1400. Example: 12.0 inch probe stroke is entered as 0120. To convert a metric stroke in millimeters, multiply millimeter value by 0.03937 to arrive at inch value.



Item	Part Number
Slide Magnet	SD0521800
Float Magnet	SD0522100
Mounting Foot	SD0522000
6 Ft Cable	949001L6
12 Ft Cable	949001L12
6 Ft Cable; Right Angle Connector	949002L6
12 Ft Cable; Right Angle Connector	949002L12

Floating Magnet Assembly (SD0522100)

\*Must set AGC when using a floating magnet



# Functional Overview

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## Mounting Instructions

The transducer can be mounted vertically or horizontally using SD0522000 Mounting Brackets. The mounting brackets slide in the grooves on the lower part of the extrusion and clamp down when tightened. It is recommended to use one mounting bracket on each end and every three feet between.

Ferro-magnetic material, (material readily magnetized) should be placed no closer than .25" from the sensing surface of the LDT.

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## Setting ZERO and SPAN Position

The Series 955S is programmable over the entire active stroke length of the LDT. Keep in mind that there is a 3" Null area at the connector end of the LDT and a 1.5" Dead area at the other end of the LDT that the magnet must stay out of at all times. The diagnostic LED can help aid you in the setup of the Zero and Span. A green or yellow LED means that it is OK to program the LDT in this area, a red LED means that the LDT cannot be programmed in this area.

To set the ZERO and SPAN position for the probe follow these steps:

1. Power up the probe in normal operating mode (i.e. "PRGM" pin floating)
2. Place magnet assembly where ZERO is to be located, but within the active region of probe
3. Momentarily short "PRGM" pin (pin 2) to ground (pin 3)
4. Place magnet assembly where SPAN is to be located, but within the active region of the probe
5. Momentarily short "PRGM" pin (pin 2) to V+ (pin 1)

**NOTE:** A. AGC should be set first before setting the ZERO and SPAN positions when using a floating magnet  
B. SPAN could also be set first, followed by setting the ZERO position  
C. ZERO or SPAN can be adjusted individually without setting the other  
D. ZERO = 0V on 0 to 10 VDC units, -10V on -10 to 10VDC units, and 4mA on 4 to 20mA units

## Automatic Gain Control

The Automatic Gain Control feature is only used when sensing a magnet other than the standard SD0521800 slide magnet. If you are using the standard slide magnet skip to Setting Zero and Span Position.

When using the Floating Magnet assembly (SD0522100), the magnet should be installed within 3/8" of the sensing surface. The magnet assembly should also be installed in such a manner that it remains an even distance from the aluminum extrusion throughout the entire stroke. Improperly installed magnets can result in output signal non-linearity.

To set the Automatic Gain Control (AGC) level for the probe follow these steps:

1. Place magnet assembly close to the dead zone (but within the active region) of the probe
2. Power down the probe
3. Short "PRGM" pin (pin 2) to ground (pin 3)
4. Apply power to probe
  - A. The LED flashes RED indicating it is in the AGC mode.
  - B. The LED will change to flashing GREEN when it has determined the proper AGC level and has saved it to non-volatile memory.

**NOTE: When the probe is in AGC mode, the output will be at either 0 volts or 4mA, depending on the model that was ordered.**

The AGC is now complete.

To place the probe back into the normal operating mode follow these steps:

1. Power down the probe
2. Remove short from "PRGM" pin
3. Apply power to the probe

The probe is now in the normal operating mode.

**NOTE: The north pole of the magnet should be pointed towards the probe.**

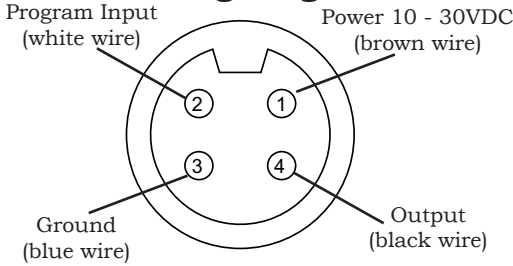
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## LED Colors

- Green:** Magnet is present and within the active programmed range
- Red:** Fault, The LDT has lost its signal from the magnet or the magnet has moved into the Null or Dead zone
- Yellow:** The magnet is out of the programmed ZERO to SPAN range.

# Dimensions and Wiring Diagram

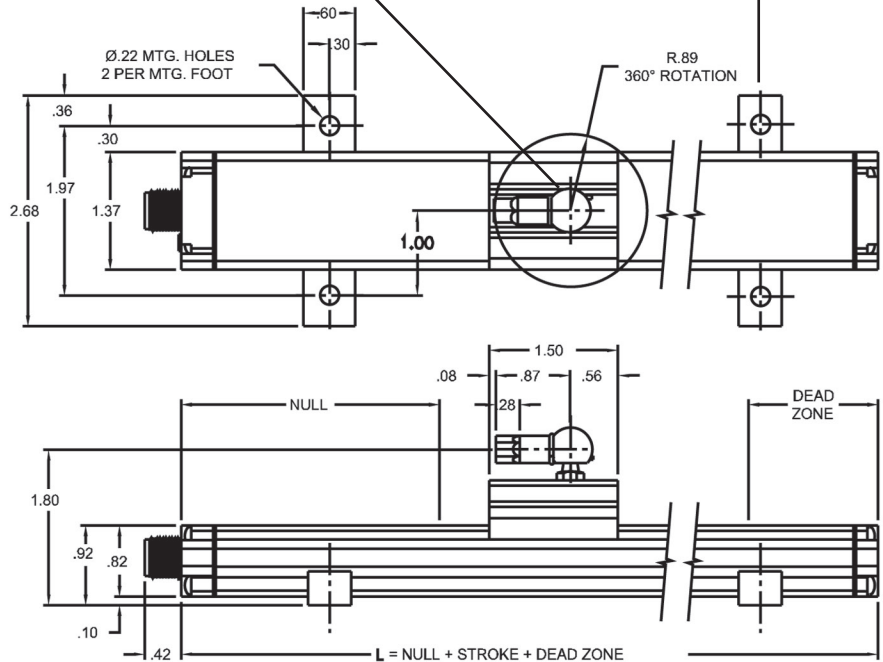
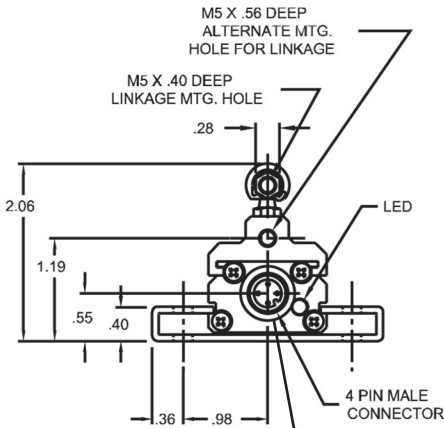
## Wiring Diagram



Mounting Brackets (SD0522000) slide in the grooves on the side of the extruded housing. When tightened down with fastening hardware the mounting brackets clamp the unit into place. It is recommended to use one mounting bracket on each end and every three feet between.

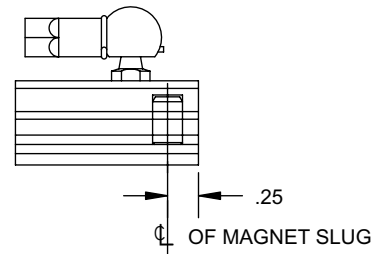
A standard female swivel mounting arm is provided with the slide magnet assembly. For extensions and other options contact SpringFix at 810-795-3555 or [www.springlinkages.com](http://www.springlinkages.com).

## Euro Connector (Micro 12 mm single keyway)



A standard 12 mm 4 pin micro connector is used. Straight mating cables can be ordered in a 6' length (949001L6), or 12' length (949001L12). If space is a consideration a right angle connector is also available, (949002L6 or 949002L12).

**\* WARNING: do not use cord sets with LED's**



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