

Crane Slew-Angle Wireless Measurement Sensor

Features

- Resolution of 0.1°
- Accuracy: typical: 0.5° over 360°
- Range: 0 to 360°
- Rugged water proof enclosure IP66
- Potted electronics for increased water protection
- Industrial tested environments: -40°C to 85°C (-40°F to 185°F); 0 to 100% relative humidity.
- Temperature compensated
- Radio range with line of sight: 4000 ft. (1300 m)
- ISM license free radio; wavelength and modulation optimized for radio communication in industrial environments.
- Operates with one 'D' cell battery lithium 3.6V or alkaline 1.5V.
- 1 to 2 years battery life for typical applications

Application

Crane slew angle measurement. The slew angle is the angle of rotation of the crane boom (upper) relative to the crane carrier (lower). Slew angle is also sometimes referred to as swing angle.

General Description

The slew sensor is composed of two parts, the encoder assembly and the sensor transmitter. They are connected together with 6 ft. (2 m) of cable. The slew sensor sends the current crane slewing angle to the cab mounted display for limit monitoring, load chart selection, work area definition and crane function lockout.

Several gear models are available to adapt the slew sensor to slewing rings with different tooth sizes. Consult the gear selection section in this document for more details.



Slew encoder assembly p/n GS031



Slew sensor transmitter p/n GS030

Table of Contents

Features	1
Application.....	1
General Description	1
Table of Contents	2
Ordering Information	2
Specifications	3
Absolute Maximum Ratings	3
Certifications	3
Gear Selection	4
Application Details	4
Installation.....	5
Dimensions.....	6
Materials:	6

Ordering Information

Model	Description
GS031	Slew encoder assembly
GS030	Slew encoder assembly
GS030-CSA	Class 1 Division 1 version of the slew sensor transmitter
PA133-01 to PA133-05	Mating gears for the GS031, see the gear selection section later in this document
TA011	Replaceable sensor transmitter antenna

GS030

Specifications

Parameter	Test Condition	Min	Typ	Max	Unit
Slew Angle					
Resolution			0.1		Degree
Accuracy	Depends on sensitivity adjustment (default = 0.5°)	0.1	0.5	1.0	Degree
Sensitivity adjustment					
	Sensitivity=0%		0.9		Degree
	Sensitivity=100%		0.5		Degree
	Sensitivity=200%		0.1		Degree
Radio Power					
	GS030	0.013 11	0.016 12	0.020 13	W dBm
Radio Frequency					
North American version	GS030	902	916	928	MHz
Battery life					
	'D' cell battery life depends on usage	12	24	28	Month
Other					
Weight	GS030		2.1 (0.95)		lb (kg)
Weight	GS031		1 (0.45)		lb (kg)

Absolute Maximum Ratings

Parameter	Test Condition	Min	Typ	Max	Unit
Input voltage		0.9	3.6	5	V
Temperature range	Operating	-40 (-40)		+60 (+140)	°C (°F)
Temperature range	Storage	-50 (-50)		+70 (+158)	°C (°F)

Certifications

FCC/IC

CSA option: class 1 division 1, Groups A, B, C and D, EXIA Intrinsically Safe, Temperature Code: T4

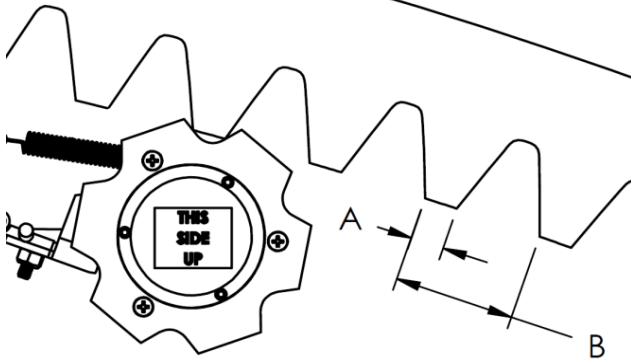
ETSI 300-220-1, 300-220-3, EN 301 489-3

EN61000-3-2, EN61000-3-3, EN61000-4-3, EN61000-4-6

EN61000-4, EN60079-0, EN60079-11, EN60079-26

Gear Selection

Measure the dimensions 'A' and 'B' before ordering and LSI will provide the right mating gear for the slew sensor. The crane slew gear may be internal or external.

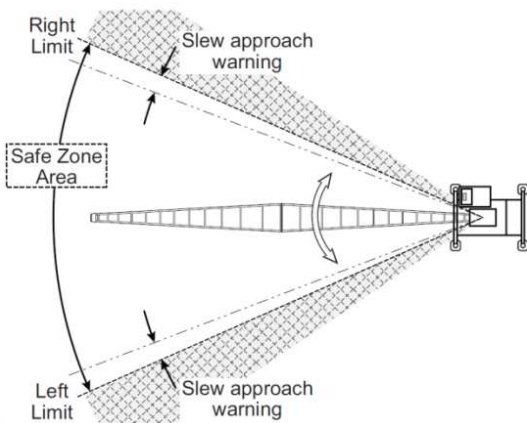


The dimensions "A" and "B" are all that is required to find the right mating gear.

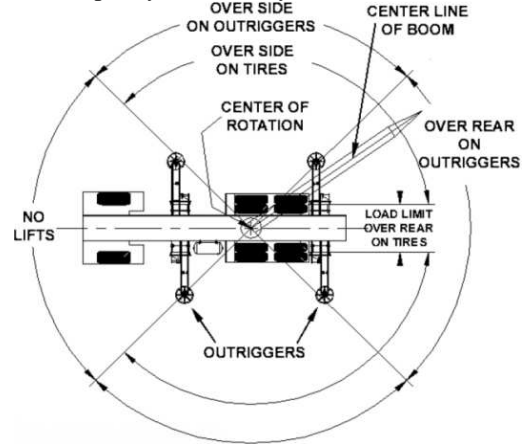
Application Details

Several applications are possible when the slew sensor is used with a compatible GS550 or GS820 display.

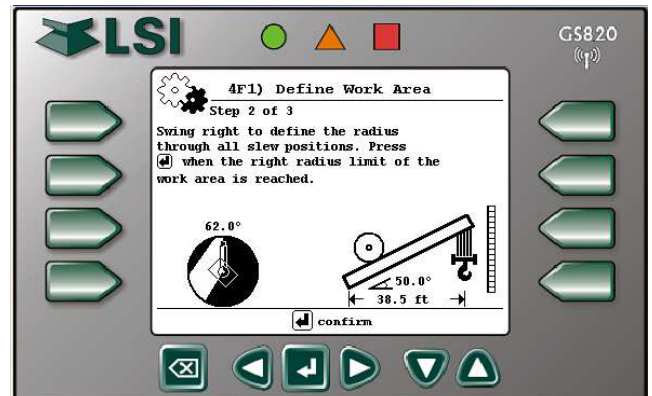
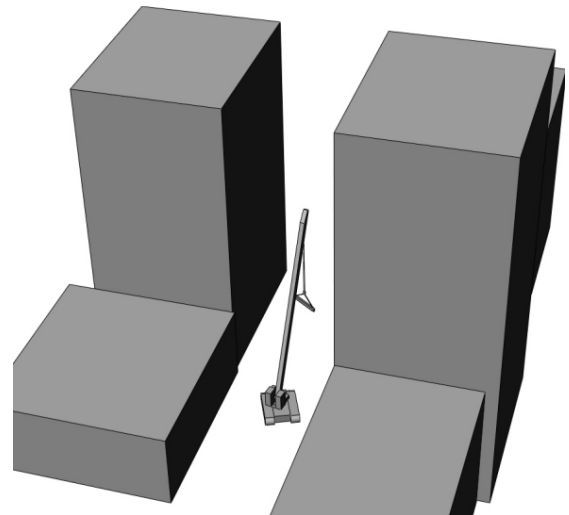
- 1) Set **slew angle limits** to limit rotation to the left or right. Crane function lockout can then be used to slow and stop the crane rotation safely when a slew angle limit is approached.



- 2) Select the correct load charts automatically based on **chart working area** when the slew sensor is used with a rated capacity indicator system.



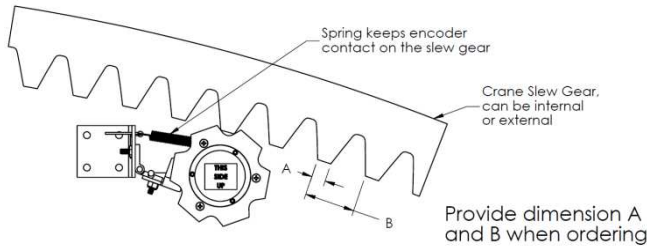
- 3) Define **safe work areas** when the slew sensor is used with a load radius indicator system.



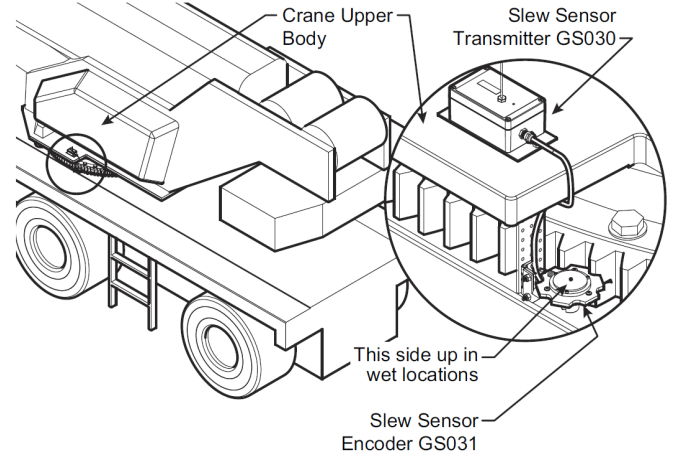
Installation

Slew encoder assembly

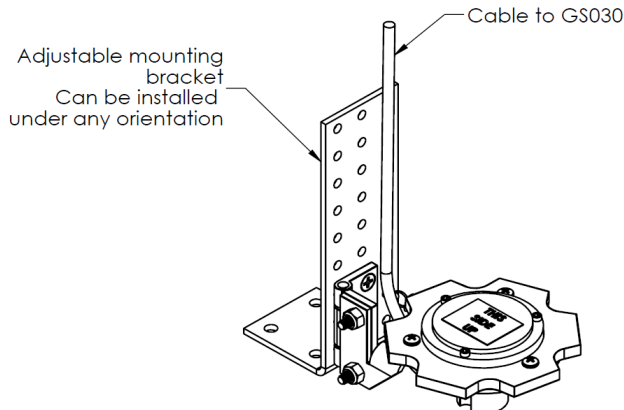
Install the slew encoder assembly near the crane slew gear where it will roll freely on the slew gear as the crane rotates. The slew sensor transmitter is connected to the slew encoder with a 6 ft. (1,8m) cable; install the transmitter where convenient within the reach of the cable; the cable can be cut down to the length required.



Example of an installation on a crane:



The slew encoder mounting bracket can be installed in several different ways to best position the encoder gear.

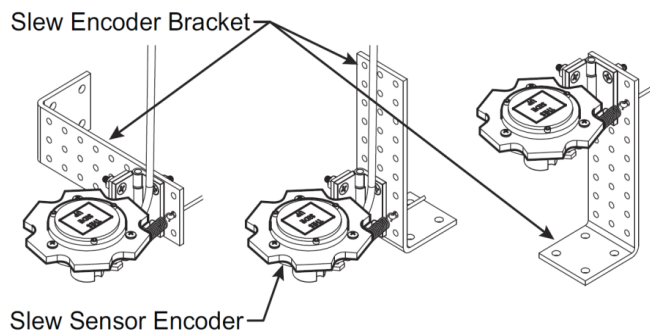


Slew sensor transmitter

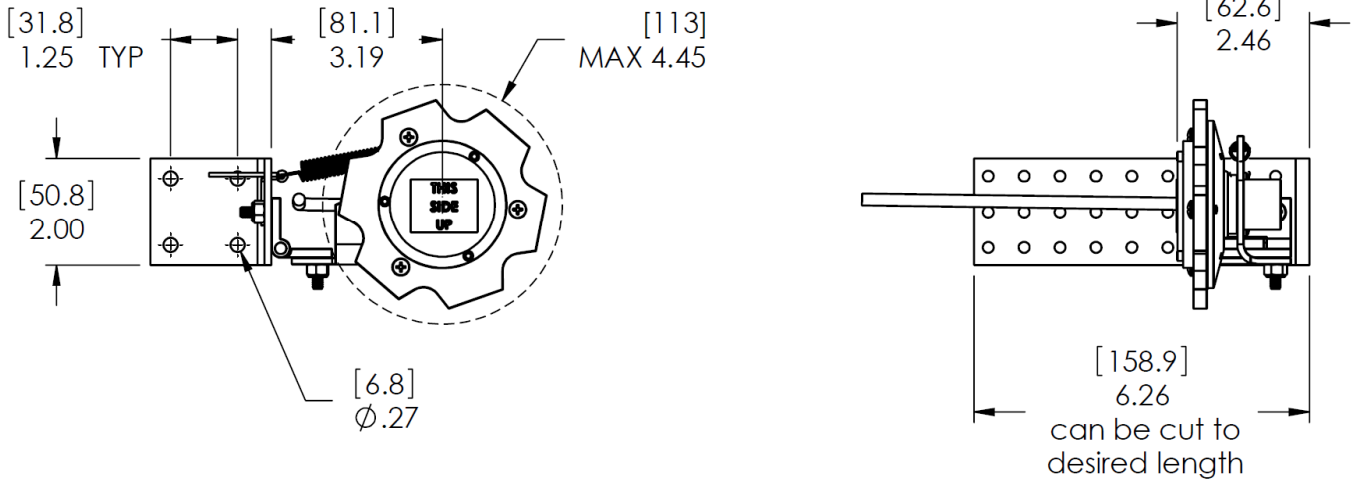
Screw the slew transmitter to a flat surface with ¼ in. screws. If needed, weld pads can be used to facilitate transmitter installation. Tie wraps can be used to secure the cable between the encoder and transmitter.

Before first use, calibrate the slew sensor by following the instructions on the GS550 or GS820 display and in the manual. Note: the number of teeth on the crane slew gear is required.

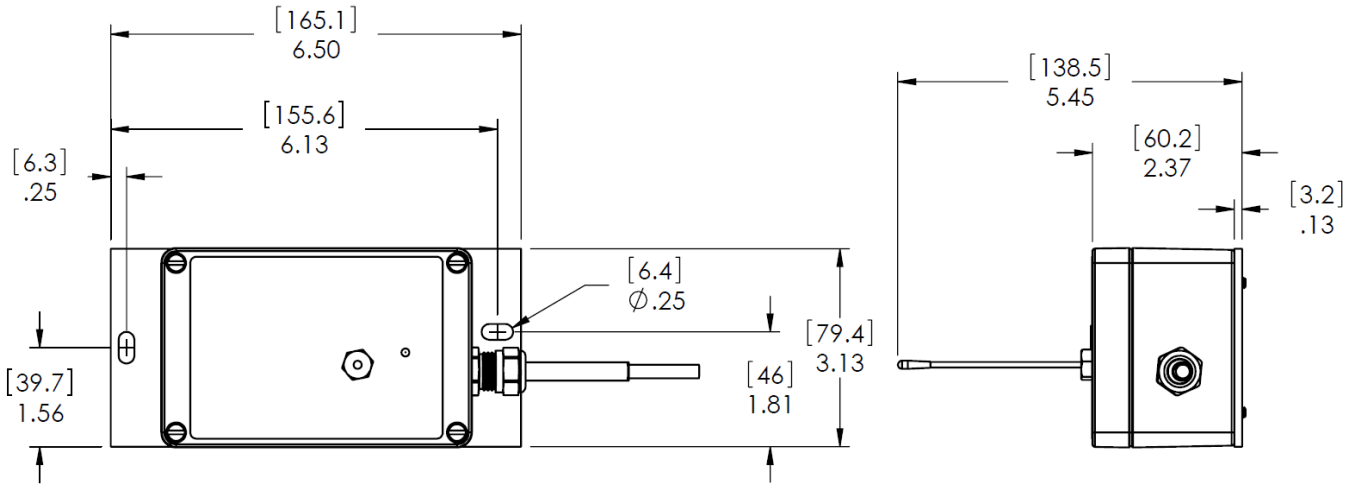
Examples for mounting bracket installation:



Dimensions



Slew encoder assembly (not to scale)



Slew sensor transmitter (not to scale)

Units are in inches [millimeters]

Materials:

The GS031 encoder is made of stainless steel and anodized aluminum with a zinc plated mounting bracket. The hinge and spring are made of stainless steel.

The GS030 transmitter is made of powder coated aluminum mounted on a stainless steel plate.