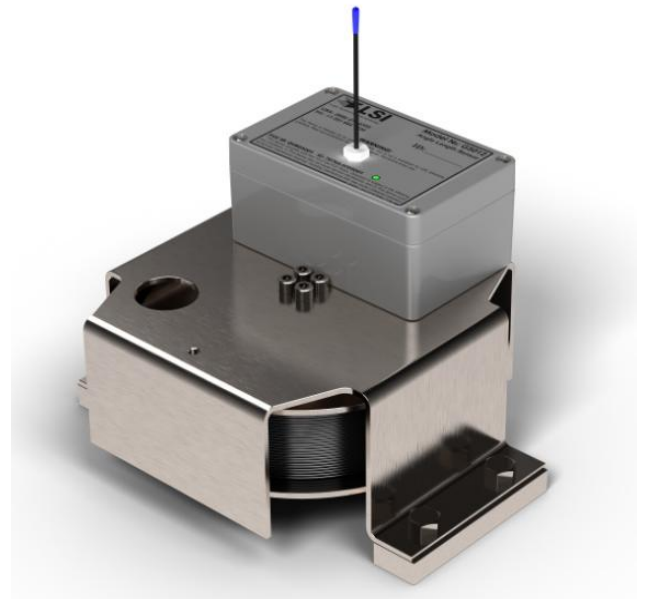


Crane Boom-Length-and-Angle Wireless Measurement Sensor

Features

- Cable reel with 32 ft. (10 m) of wire rope to measure length
- Length resolution: 0.1 ft. (30 mm)
- Length accuracy: 0.1 ft. (30 mm)
- Angle resolution: 0.1°
- Angle accuracy: typical: 0.2°
- Angle range (GS110): -90° to +130°
- Angle range (GS110-02): 0° to 360°
- Measurement is optimized for crane movements; both the boom angle and the boom length are measured four times per second.
- The GS110 can be installed on either side of the main boom; the sensor automatically rights itself.
- Radio range with line of sight: 4000 ft. (1300 m)
- Operates with one 'D' cell battery lithium 3.6V or alkaline 1.5V.
- 1 to 2 years battery life for typical applications
- ISM license free radio; wavelength and modulation optimized for radio communication in industrial environments.
- Temperature range: -35°C to 65°C (-31°F to 150°F)
- Temperature compensated
- Potted electronics for increased water protection
- Remote angle level adjustment from compatible cab mounted display



Mini cable reel p/n GS110

Applications

- Measurement of crane boom length and of crane boom angle to horizontal. The wire rope can be fixed at the boom tip for the complete boom length measurement.
- For boom lengths longer than 32 ft., the wire rope can be attached to the end of the first extending boom section, with the condition that all boom sections must always extend proportionally and at the same time.

General Description

The cable reel has more than 32 ft. (10 m) of extendable, spring loaded, wire rope. The extremity of the wire rope should be fixed to the extremity of the length to be measured. The cable reel ships with an anchor and cable guides.

The transmitter box on top of the cable reel houses the battery, the radio transmitter and the solid state accelerometer-based angle sensor.

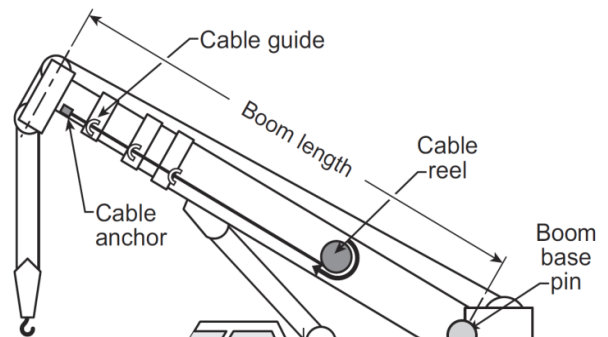


Figure: cable reel installation on the main boom for the measurement of crane boom length

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Ordering Information

Model	Description
GS110	Cable reel with transmitter for length (32 ft.) and angle
GS110-02	Cable reel with transmitter for length (32 ft.) and 360° angle. Side of boom for installation must be specified when ordering (default: left). Typically used on knuckle booms.
GS110-CE	GS110 CE certified, with radio frequency suitable for Europe, most of Asia and Middle East
TC103-A	Replacement Cable
TA011	Replacement sensor antenna
PA111	Replacement rod cable guide
PA113	Anchor for wire rope end

Other related part numbers:

GS101: cable reel for length up to 140 ft.

QC024: cable reel wire rope clamp (McMaster № 5513T11)



GS110

Specifications

Parameter	Test Condition	Min	Typ	Max	Unit
Angle					
Resolution			0.1		Degree
Accuracy			0.3		Degree
Length					
Resolution			0.1 (30)		ft. (mm)
Accuracy			0.1 (30)		ft. (mm)
Radio Power					
	GS110	0.013 11	0.016 12	0.020 13	W dBm
Radio Frequency					
North American version	GS110	902	916	928	MHz
European version	GS110-CE	868		870	MHz
Battery life					
	'D' cell battery life depends on usage	12	24	28	Month
Other					
Weight	GS110		15 (6,8)		lb (kg)

Absolute Maximum Ratings

Parameter	Test Condition	Min	Typ	Max	Unit
Temperature range	Operating	-35*		+65	°C
		-31*		+150	°F

*The GS110 will work below -35°C (-31°F), but the cable may rewind slowly when the boom is retracted.

Certifications

Safety : IEC 61010-1
EMC : EN 301 489-3 V1.4.1 (2002-08)

FCC : Part 15 Subpart C, 247

I.C. : Industry Canada

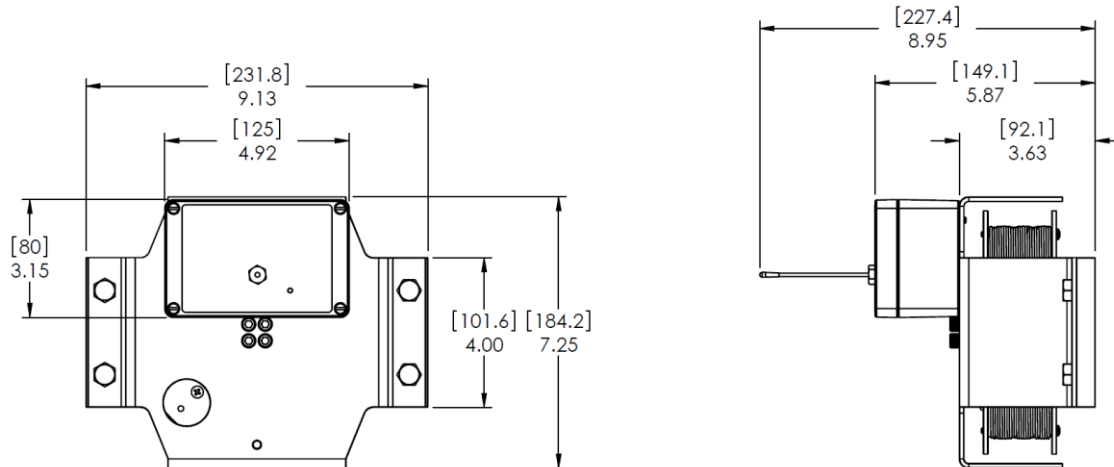
CE version :
Wireless : EN 300 220-3 V1.1.1 (2000-09)

GS110

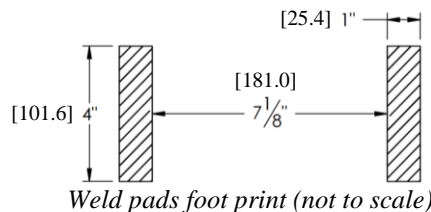
Application Notes

The angle sensor in the GS110 automatically detects on which side of the boom it is installed when the boom angle is less than 45° to horizontal. For knuckle booms and other applications where the boom angle may go beyond the -90° to +130° range of the GS110, the GS110-02 with 360° angle sensor should be used. Left or right side installation must be specified when ordering the GS110-02.

Dimensions and Installation



Cable reel (not to scale)



Weld pads foot print (not to scale)

Units are in inches [millimeters]

Cable reel placement: find a clear mounting position on the cab side of the first (lower) section of the main boom. The mounting position should be close to the base of the boom; at least 5 ft. (1.5 m) from the tip of the first section and where the cable reel won't obstruct free boom movement at all boom angles and slew positions. Furthermore, the reel must be placed such that the cable has a clear straight line to the end of the last section at all boom lengths.

Mount the welding tabs. They must be placed parallel to each other, 7 1/8 in. apart. Install the tabs such that they create a level mounting position in line with the boom when horizontal (0°). Correct alignment of the first guide is important to ensure orderly winding of the cable on the reel. Install the other guides at the end of each of the intermediate sections and the anchor at the end of the last section. All guides must be aligned so as to permit unobstructed movement of the cable. Proceed with length calibration.

The angle sensor is pre-calibrated and temperature compensated; see the installation section in the user manual for details.

Materials:

The cable reel is entirely made of stainless steel with sealed bearings and a stainless steel wire. The transmitter is made of powder coated aluminum.