

GS112-V2

Crane Boom-Length-and-Angle Wireless Measurement Sensor

Features

- Cable reel with 140 ft. (42 m) of wire rope to measure length
- Length resolution: 0.07 ft. (22 mm)
- Length accuracy: 0.07 ft. (22 mm)
- Angle resolution: 0.1°
- Angle accuracy: typical: 0.5°
- Angle range (GS112-V2): -90° to +130°
- Angle range (GS112-02): 0° to 360°
- Measurement is optimized for crane movements; both the boom angle and the boom length are measured four times per second.
- The GS112-V2 can be installed on either side of the main boom; the sensor automatically adjusts itself.
- Radio range with line of sight: 4000 ft. (1300 m)
- Operates with one 'D' cell lithium 3.6V or alkaline 1.5V battery.
- 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: -30°C to 65°C (-22°F to 150°F)
- Temperature compensated
- Potted electronics for increased water protection
- Remote angle level adjustment from compatible cab mounted display

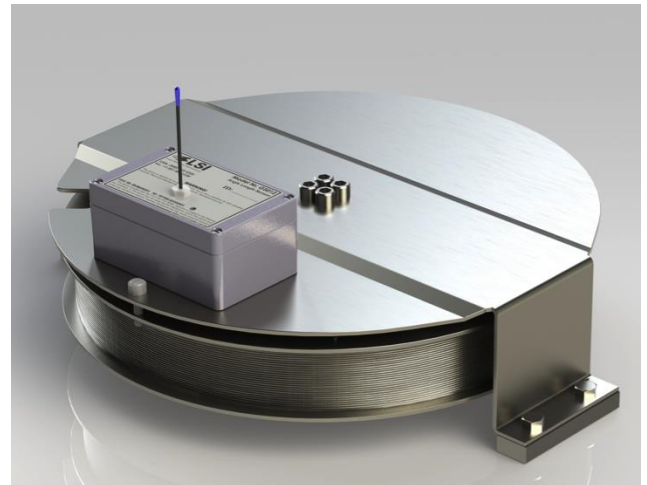
Applications

Measurement of crane boom length and crane boom angle to horizontal. The wire rope is fixed at the boom tip for the complete boom length measurement.

General Description

The cable reel has 140 ft. (42 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 (QTY 1) and cable guides (QTY 4).

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



Cable reel p/n GS112-V2

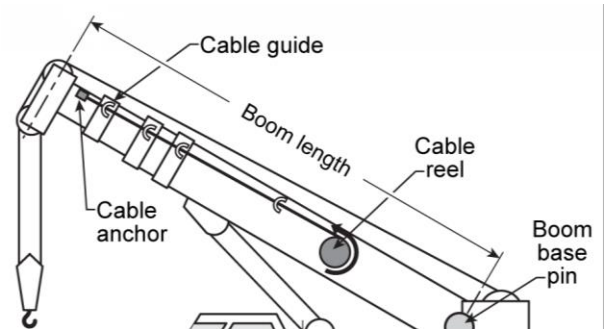


Figure: cable reel installation on the main boom for the measurement of crane boom length

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Ordering Information

Model	Description
GS112-V2	Cable reel with transmitter for length (140 ft.) and angle
GS112-02	Cable reel with transmitter for length (140 ft.) and 360° angle. Side of boom for installation must be specified when ordering (default: left). Typically used on knuckle booms.
GS112-CE-V2	GS112 CE certified, with radio frequency suitable for Europe, most of Asia and Middle East
TC103-B	Replacement Cable
TA011	Replacement sensor antenna
PA111	Replacement rod cable guide
PA113	Anchor for wire rope end
PE243	Adaptation kit to install a GS112-V2 on existing LS101 weld pads

Other related part numbers:

QC011: Cable reel wire rope clamp (McMaster N^o 5513T11)



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Specifications

Parameter	Test Condition	Min	Typ	Max	Unit
Angle					
Resolution			0.1		Degree
Accuracy			0.5		Degree
Length					
Resolution			0.07 (22)		ft. (mm)
Accuracy			0.07 (22)		ft. (mm)
Radio Power					
	GS112-V2		0.0054 7		W dBm
Radio Frequency					
North American version	GS112-V2	903	916	927	MHz
European version	GS112-CE-V2	868		870	MHz
Battery life (depends on usage)					
	'D' cell lithium	12	24	28	Month
	'D' cell alkaline	8	12	16	Month
Other					
Weight	GS112-V2		46 (21)		lb (kg)

Absolute Maximum Ratings

Parameter	Test Condition	Min	Typ	Max	Unit
Temperature range	Operating	-30*		+65	°C
		-22*		+150	°F

*The GS112-V2 will work below -30°C (-22°F), but the cable may rewind slowly when the boom is retracted.

Certifications

FCC/IC/CE certification : FCC Part 15 Subpart C 15.247,15.205, 15.207 & 15.209

ETSI EN 300 220 (AA)

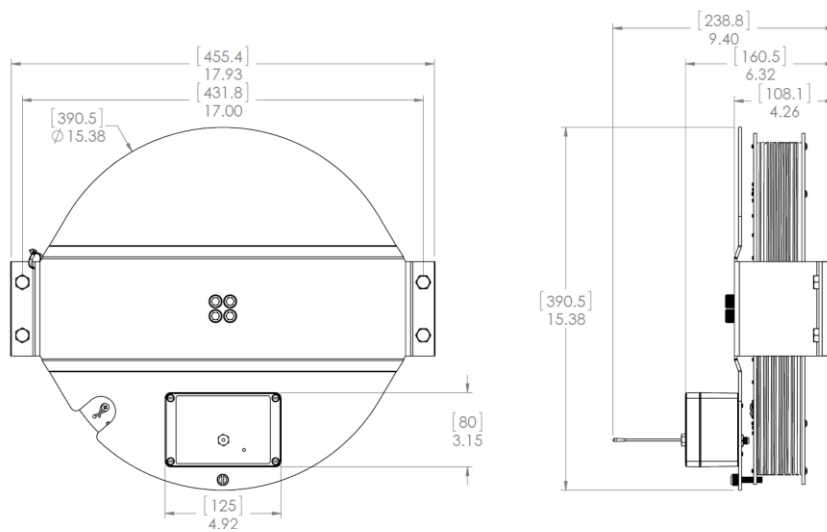
EMI/C - EN 61000-4-3, EN 61000-4-2

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Application Notes

The angle sensor in the GS112-V2 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 GS112-V2, the GS112-02 with 360° angle sensor should be used. Left or right-side installation must be specified when ordering the GS112-02.

Dimensions and Installation



Cable reel (not to scale)

Weld pads footprint (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 10 ft. (3 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 pads. They must be placed parallel to each other, 16 in. apart. Install the pads such that they create a level mounting position in line with the boom when horizontal (0°). **DO NOT WELD THE PADS WITH THE REEL ATTACHED. THIS WILL VOID WARRANTY.** Correct alignment of the first guide is important to ensure orderly winding of the cable on the reel. When installing the guides, the first guide should be placed close to the cable reel to ensure that the cable wraps properly on the reel. This distance should be no further than 36" from 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. Guides may need to be cut to ensure alignment with the reel. Extra length is provided on the guides.

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 (AISI 304) with sealed bearings and a stainless-steel wire. The transmitter is made of powder coated aluminum.

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PMN: GS112-V2

HVIN: MB129-01-SD-A

FCC Compliance Statement (USA)

FCC ID: S9E-GS200F

Compliance Statements: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including, an interference that may cause undesired operation.

Caution Statements:

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Industry Canada (IC) Compliance Statement

IC: 5817A-GS000F

Compliance Statements: This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: 1) This device may not cause interference., 2) This device must accept any interference, including interference that may cause undesired operation of the device.

Déclarations de conformité: Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution Statements:

- This equipment complies with radio frequency exposure limits set forth by Industry Canada for an uncontrolled environment.
- This equipment should be installed and operated with a minimum distance of 20 cm between the device and the user or bystanders.

Déclarations de mise en garde:

- Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par Industrie Canada pour un environnement non contrôlé.
- Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance dispositif et l'utilisateur ou des tiers.

Information to the User

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.