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Trimble LR410 Laser Receiver

Weatherproof 360° laser receiver

General Description

The Trimble® LR410 Laser Receiver is designed to be used with either the new GCS 300-600 Grade Control System or the Prinz Albert systems as a replacement for the RS2S laser receiver. Engineered for use in harsh environments, the LR410 is 100% weatherproof and features 360° laser detection. Integrated reference LEDs, located in the corner of each of the four laser receiving windows, show the laser strike location from the center of the receiver, power, and error status, for fast visual receiver status. An industry-standard CAN (SAE J1939) interface makes system integration easy.



Linear Detection – Exact laser strike positions to within 1.5mm (0.06") for precise automatic grade control. Unlike other laser receivers that provide only 5 to 7 fixed relative grade regions, the LR410 provides a continuous, absolute laser strike position to precisely measure the actual height deviation from “On Grade.” This feature gives you the highest accuracy and grade performance.

Extended Laser Detection Window – Standard laser receivers provide only 200 mm (7.9") of vertical laser detection. The LR410 offers an additional 31 mm (1.2") for a total of 231 mm (9.1") of detection length, keeping you in the laser beam longer. Regardless of your application, from rough grading to fine grading, display to automatic, the LR410 ensures more grade information—even on the toughest jobs.

LED Status Indicators – Red LEDs, located at the top of each window, indicate: laser strike position from the center of the laser receiver, out-of-range, power, and error status information. For rigid mast applications, the LEDs provide visual information to set up the receiver. The LED ensures that the laser receiver is set up in the center of the receiving range when manual receiver positioning is required to provide equal range between cuts and fills.

LED Display	Condition
Solid red	Laser beam is striking the center of the laser receiver—an on-grade condition
Fast flashing	Receiver is above grade
Slow flashing	Receiver is below grade

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Universal Laser Receiver – The LR410 features an automatic detection circuit that switches the output signal between CAN J1939 or analog depending on the system to which it is connected. Now existing Prinz Albert customers can upgrade to a state-of-the-art universal laser receiver that can be used with their existing system, as well as a future new system.

One-Hand Receiver Mount – Designed for easy installation and use in the toughest construction environments. This convenient new clamp allows one-handed mounting and tightening for easy installation and removal. Clamping force improves by over 50% and eliminates the possibility of the receiver rotating or loosening on the mast.

Selectable On-Grade Accuracy – Selectable accuracy within the CB420 control box lets you match your application requirements. Using the right accuracy for the job means clearer feedback to the operator and less display “jitter.” Work to the tolerances demanded by the job by selecting the correct on-grade accuracy.

Built to Last – When a product has the Trimble name, you know it will withstand years of tough use. The LR410’s die-cast hermetically sealed housing is designed and built to the most demanding construction industry standards.

Standard Features

- Full 360° laser detection field of view
- 231mm (9.1") detection window
- Linear detection position to within 1.5 mm (0.06")
- 100% sealed and weatherproof enclosure
- Sunlight viewable LEDs indicate set up, power and errors
- Auto-dim LED display
- Non-rotation clamp
- Selectable on-grade accuracy from the CB420 control box
- Industry-standard CAN (SAE J1939) interface

Specifications

Physical characteristics	Specifications
Size	Length: 292mm (11.5") Width: 168mm (6.62") Depth: 213mm (8.38") including clamp
Weight	<2.8 kg (6.3 lb)
Mounting Clamp	Fits round masts 1.5" to 1.93" OD or square masts 1.5" to 1.75" OD
Connectors	MIL-C-5015

Environmental characteristics	Specifications
Temperature	Operating: -40°C to +71°C (-40°F to +160°F) Storage: -55°C to +85°C (-67°F to +185°F)
Humidity	100%, fully sealed, weatherproof
Sealing	Environmentally sealed to 34.48 kPA (5 psi) IP68
System Level EMC	Emissions: Compliant with CE (ISO 13755) Susceptibility: Compliant with CE (ISO 13766)

Technical characteristics	Specifications
Electrical Input Voltage	9 to 30 VDC
Operating Current	500mA maximum @12 VDC
Reverse Voltage Protection	Yes, to 36 VDC
Load Dump Protected	Yes, compliant to ISO 7637-1 and 7637 specifications
System Interface	SAE J1939 CAN
Laser Transmitter Speed	270 to 1320 RPM
Laser Beam Acceptance Angle	360°
LED Brightness	Auto-dimmed

Control Dead Bands

Control Dead Bands	GCS 300-600 From Center	P.A. System 7 Channel	P.A. System 5 Channel
On Grade	Adjustable from Operator Interface	+/- 4.5mm (+/- 0.015')	+/- 4.5mm (+/- 0.015')

LED Indicator Status

GCS400		LED pattern																			
Status	Mode	2 Seconds (Shown in Tenths of sec.)																			
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Beam Above center of Receiver	Flashes 5 times per second (5 Hz.)	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○
Beam at center of receiver	Solid	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Beam below center of receiver	Flashes 2.5 times per second (2.5 Hz.)	●	●	○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●	○	○
On but no Beam detected	One flash every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Error	Two flash at 5 Hz every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Undecided Mode P.A./GCS400	Four flashes at 5 Hz every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Prinz Albert Mode		LED pattern																			
Status	Mode	2 Seconds (Shown in Tenths of sec.)																			
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Beam above center of receiver	Flashes 5 times per second (5 Hz.)	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○
Beam at center of receiver	Solid	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Beam below center of receiver	Flashes 2.5 times per second (2.5 Hz.)	●	●	○	○	●	●	○	○	●	●	○	○	●	●	○	○	●	●	○	○
On but no beam detected	Two sets of 5 Hz flashes every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Undecided Mode P.A./GCS400	Four flashes at 5 Hz every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Error	Two flash at 5 Hz every 1.6 seconds	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○