

MONITOR, TROUBLESHOOT, AND MAKE ADJUSTMENTS REMOTELY OR AT YOUR MACHINE WITH GUARDIAN® TELEMATICS



Roadtec Guardian® Telematics

The Roadtec Guardian® Telematics System consists of software, on-machine viewing screens, and wireless signal boosters to send and receive data at the machine. Numerous functions such as engine data and fuel consumption can be viewed at the machine or on your computer screen from a remote location.

Guardian® Telematics comes standard on:

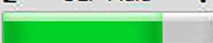
- RP-190/195 pavers
- RX-600, RX-700, and RX-900 cold planers
- SX-6 and SX-8 soil stabilizers/reclaimers
- SB-2500 and SB-1500 Roadtec Shuttle Buggy® MTV

*Optional on RP-170/175, MTV-1100, MTV-1105, and RX-300

Help from Roadtec service is only a phone call away! They see the same information you see and can guide you through the fix or do it for you.

Monitor & Troubleshoot Your Machine's

- Fuel Consumption
- Engine Codes
- Alarms
- Starting Circuit
- Cutter Circuit
- Auto Water Circuit
- Conveyor Speeds
- Propel Functions
- Load Control
- Steering Circuit
- Machine Production
- Grade & Slope
- Hydraulic Pressure
- Engine Dashboard

| Fuel PSI N/A | Turbo Boost PSI 2.32 | Engine % Load 19 | Travel Speed FPM 0 | | | | | | | | | | | | |
|--|----------------------------------|-------------------------------------|---|-----|-------|--|--|--|--|--|--|--|--|--|---|
| Fuel Temp 32 | Coolant Temp 181 | Inlet Air Temp 89 | Fuel Tank Level FULL | | | | | | | | | | | | |
| Battery Voltage 27.50 | Oil PSI 38.9 | Engine % Soot Load 1 | Total Fuel Used 7125.9 | | | | | | | | | | | | |
| Engine Speed 1069.5 | Engine Hours 910.7 | Inst. Gal/Hr 2.0 | Avg. Gal/Hour 7.82 | | | | | | | | | | | | |
| | Engine Idle Hours 49.6 | Total Idle Fuel Burn 75.8 | E DEF Fluid F  TIER 4 FINAL ONLY | | | | | | | | | | | | |
| Active Engine Fault Codes | | | Hours Until Service 113.6 | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Fault Code</th> <th>FMI</th> <th>Count</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> | | | Fault Code | FMI | Count | | | | | | | | | | <input type="button" value="FORCE REGEN"/> <input type="button" value="INHIBIT REGEN"/> |
| Fault Code | FMI | Count | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| PreviouslyActiveEngine Fault Codes | | | <input type="button" value="Request Previously Active Fault Codes"/> | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Fault Code</th> <th>FMI</th> <th>Count</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> | | | Fault Code | FMI | Count | | | | | | | | | | <input type="button" value="Clear Fault Codes"/> |
| Fault Code | FMI | Count | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

Real-time Machine Data

See everything instantly: from fuel consumption, fault codes, time to service intervals, machine speed, grade and slope settings, or even the exact location of the machine (via GPS).

Designed by Roadtec for Roadtec

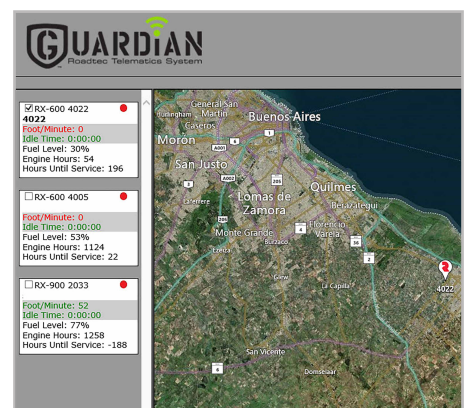
Guardian® Telematics is for Roadtec customers who are looking to dramatically lower operating costs and increase productivity.

View Remotely and On-board the Machine

Log into the machine from your computer or you can view the information on the machine's display screens.

Strong Signal with Cell Booster

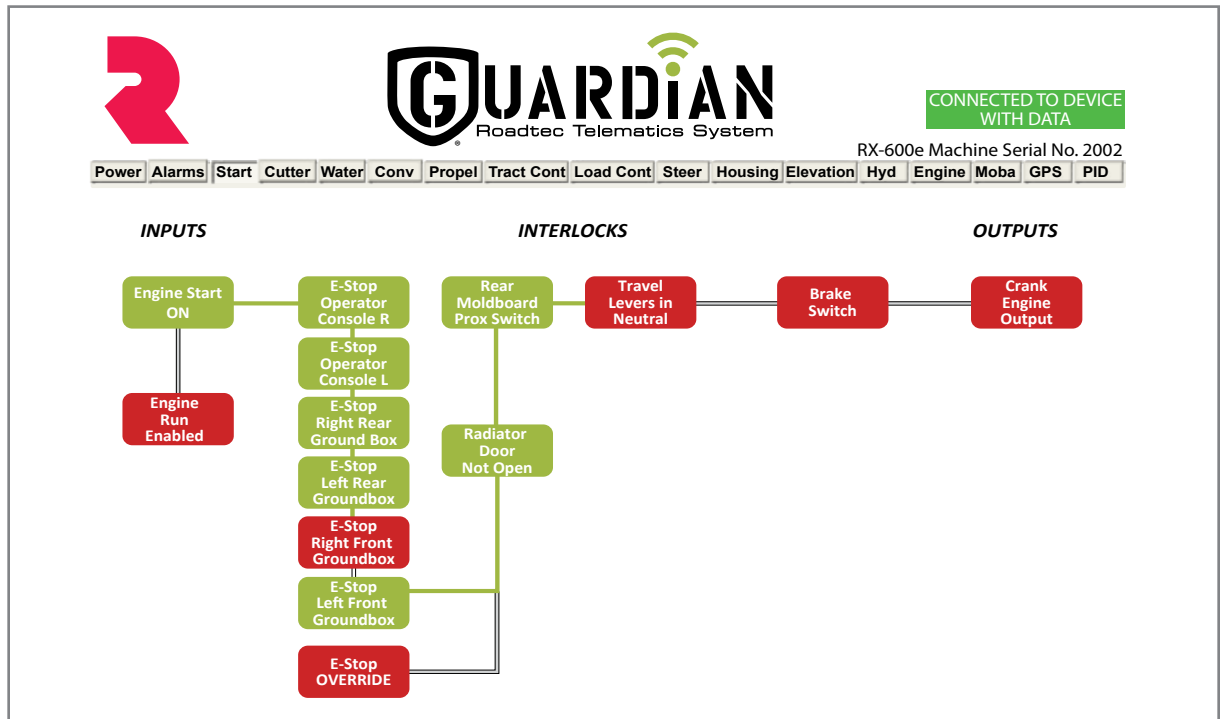
The connection to and from the machine is wireless and uses a cell booster to ensure a strong signal. If an Internet connection is unavailable at any given location, the on-board computer stores faults until the connection is restored and then sends the e-mail.



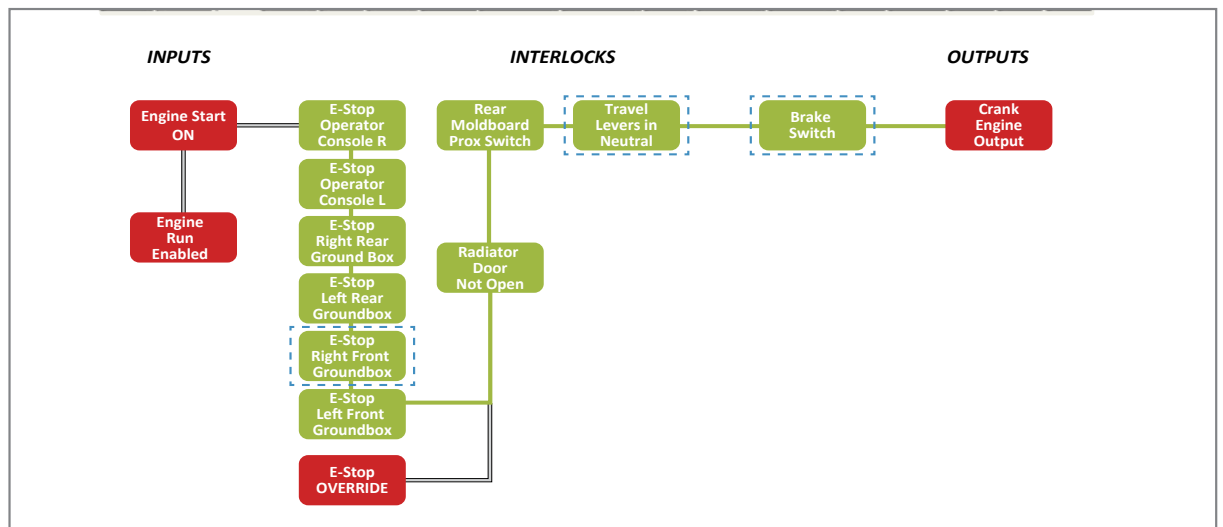
Your machine can be located by GPS using the Guardian® system.

THE GUARDIAN SYSTEM SHOWS MACHINE CIRCUITS & SYSTEMS AS LIVE SCHEMATICS SO ISSUES CAN BE SOLVED INSTANTLY.

1.



2.



1. **TROUBLESHOOTING: MACHINE WON'T START**
 THE START CIRCUIT VIEW SHOWS:
 Right Front E-Stop activated.
 Travel Levers are not in neutral.
 Parking Brake is not on.

2. **MAKE CORRECTIONS**
 THE START CIRCUIT VIEW SHOWS:
 Right Front E-Stop is deactivated.
 Travel Levers are now in neutral.
 Parking Brake is now on.

3.

The screenshot shows the 'Production' window of the Guardian software. It is divided into four main sections:

- Production Data:** Displays real-time metrics such as Material Discharge (16.27), Time Elapsed Loading Truck (05:32), Width of Milling Cut (6.58), and Depth of Cut (Left: 0.0, Right: -2.2). It also includes controls for Depth Measurement Mode (Automatic) and Full Pass Width.
- Daily Totals:** A summary of daily performance including Total Tons (48.7), Total Square Yards (476.7), Total Cubic Yards (24.3), Total Trucks Loaded (3), Total Linear Feet (652), Total Fuel Burn (11.5), Total Work Time (00:10), Average Truck Loading Time (03:36), Estimated Time of Completion (0), and Teeth Changed (0).
- Setup And Calibration:** Allows for adjusting parameters like Calibration Tons/Cubic Yard (2.00), Change Width of Milling Cut (6.58), Set Fixed Depth of Cut (1.80), and Select Depth Measurement Mode (Automatic).
- Machine Totals:** Shows cumulative machine performance over time, including Total Tons (13897.2), Total Square Yards (226567.7), Total Cubic Yards (6948.7), Total Trucks Loaded (617), Total Linear Feet (309895), Total Fuel Burn (5500.3), Total Work Time (135:38), Average Truck Loading Time (05:09), and Total Teeth Used (0).

4.

The screenshot displays the slope control interface, split into two main views:

- Controller View (Left):** Shows a 'CONTROLLER 1' interface for a TOPCON device. It features a digital display showing a slope of -2.20 inches. Below the display are buttons for 'Menu/Set', 'T', and 'A'. To the right, there are configuration options for Mode (Grade), Sensor Type (Sonic), Sensor Error (No Error), Display Units (Inches), Grade Set Mode (Normal), Slope Set Mode (Normal), Slope Error (No Error), and Slope Resolution (0.1%).
- Settings View (Right):** Shows a 'SLOPE CONTROL' settings menu. It includes a 'SAVE OR RESTORE PROFILE' button and various adjustable parameters: SE (60), POS (N/A), CAL (Inches), S-S (Dual Sonic), W-W (OFF), TYPE (1), MIN Current UP (0.40), MAX Current UP (0.50), MIN Current DN (0.40), and MAX Current DN (0.50). There are also buttons for 'SET ROADTEC DEFAULTS' and 'CHANGE CURRENTS'. At the bottom, there are sections for 'Rear Sens', 'Center Sens', and 'Front Sens', all currently set to 'None'. A 'CANCEL LA' button is visible, with a note: 'Pressing CANCEL / put both controlle'.

3. GUARDIAN PRODUCTION

Monitor and record daily totals, machine totals, and live scale data.

4.

Guardian works with most major brand grade and slope controls, including ACE™, MOBA®, and TOPCON®. Controls up top let the operator control both sides. Now you can work with at least one less ground man.

5

Steering Elevation

STEERING CALIBRATION

ADJUST LF WHEEL

DECREASE CAL Factor
STEER LEFT

INCREASE CAL Factor
STEER RIGHT

LF Steer Sensor

0

Left Front Wheel

LF Angle 0

Act mA 0 0

Des mA 0 0

RF Steer Sensor

0

Right Front Wheel

RF Angle 0

Act mA 0 0

Des mA 0 0

ADJUST RF WHEEL

DECREASE CAL Factor
STEER LEFT

INCREASE CAL Factor
STEER RIGHT

Capture and Apply ALL Current Settings

ADJUST LR WHEEL

DECREASE CAL Factor
STEER LEFT

INCREASE CAL Factor
STEER RIGHT

LR Steer Sensor

0

Left Rear Wheel

LR Angle 0

Act mA 0 0

Des mA 0 0

RR Steer Sensor

0

Right Rear Wheel

RR Angle 0

Act mA 0 0

Des mA 0 0

ADJUST RR WHEEL

DECREASE CAL Factor
STEER LEFT

INCREASE CAL Factor
STEER RIGHT

6

Steering Elevation

ELEVATION CALIBRATION

Actual mA 0

Desired mA 0

Left Front Jog Up Output 0

Left Front Elevation Sensor 0

Left Front Elevation Setpoint 0

Right Front Elevation Sensor 0

Right Front Elevation Setpoint 0

Right Front Jog Up Output 0

Actual mA 0

Desired mA 0

ADJUST LF CYLINDER

DECREASE CAL Factor
LOWER LEG

INCREASE CAL Factor
RAISE LEG

Left Rear Jog Up Output 0

Actual mA 0

Desired mA 0

Left Rear Elevation Sensor 0

Left Rear Elevation Setpoint 0

Right Rear Jog Up Output 0

Actual mA 0

Desired mA 0

Capture and Apply ALL Current Settings

ADJUST LF CYLINDER

DECREASE CAL Factor
LOWER LEG

INCREASE CAL Factor
RAISE LEG

Right Rear Jog Down Output 0

Actual mA 0

Desired mA 0

Right Front Elevation Sensor 0

Right Front Elevation Setpoint 0

Right Rear Jog Down Output 0

Actual mA 0

Desired mA 0

ADJUST RF CYLINDER

DECREASE CAL Factor
LOWER LEG

INCREASE CAL Factor
RAISE LEG

Left Rear Jog Down Output 0

Actual mA 0

Desired mA 0

Right Rear Elevation Sensor 0

Right Rear Elevation Setpoint 0

Right Rear Jog Up Output 0

Actual mA 0

Desired mA 0

ADJUST RR CYLINDER

DECREASE CAL Factor
LOWER LEG

INCREASE CAL Factor
RAISE LEG

Right Front Elevation Sensor 0

Right Front Elevation Setpoint 0

Right Rear Jog Down Output 0

Actual mA 0

Desired mA 0

Right Rear Jog Up Output 0

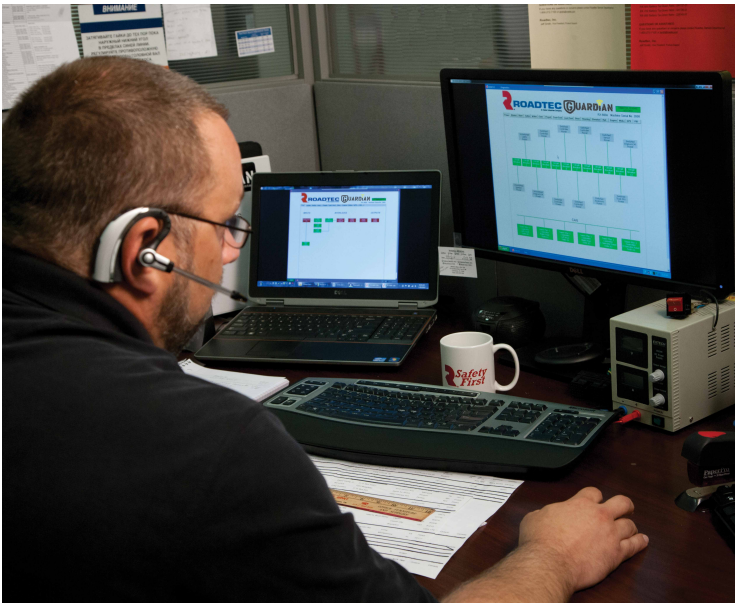
Actual mA 0

Desired mA 0

5. ADJUST STEERING CALIBRATION

6. ADJUST ELEVATION CALIBRATION

STAY CONNECTED TO ROADTEC AND YOUR CREW. ADDRESS YOUR MACHINE ISSUES QUICKLY AND SAVE MONEY BY ELIMINATING FALSE ALARMS AND WASTED TRIPS.



From: Guardian@Roadtec.com
Sent: Friday, February 26, 2016 9:38:43 AM (UTC-05:00) Eastern Time
To: Roadtec Diagnostics
Subject: Fault Notification RX-600e S/N-2071

Dear Roadtec,

Machine Model: RX-600e
Serial No: 2071

The machine/engine faults for the RX-600e S/N-2071 are listed below.

2/26/2016 9:38:41 AM @ 1904.9 Hrs.
SPN: 110 Engine Coolant Temperature Sensor
FMI: 18 Data valid but below normal operational range- moderately severe level
Occ: 3

2/25/2016 3:28:05 PM @ 1903.7 Hrs
SPN: 3597 ECU Power Supply Output No. 1
FMI: 18 Data valid but below normal operational range- moderately severe level
Occ: 2

Know What's Happening

Control how and when you will receive automated email alerts about maintenance schedules. See part numbers for service items such as filters. Designate someone of your choice to receive e-mails from the Guardian Telematics System concerning any fault codes that may be generated. Your designated people can log on to the machine and address the problems. Finally, you can also call Roadtec service, and have a Roadtec service technician dial into your machine to confirm and help resolve issues.

The Bottom Line: Benefits

- Save money spent on sending mechanics into the field to locate issues
- Minimize down time by isolating and correcting problems within minutes
- Increase machine life and uptime by performing all scheduled maintenance
- Eliminate false alarms and wasted trips
- Use production data to fine tune your operation and maximize productivity
- Monitor machine processes in real time





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