

# TerraRover

GPS SYSTEMS

## NAVIGATION & PRODUCTIVITY TOOLS

Surface and Aggregate Mining



**DataMetrics**™

Fully Mission Capable™

LogicAll Solutions  
LLC

**Microsoft**  
REGISTERED  
Partner





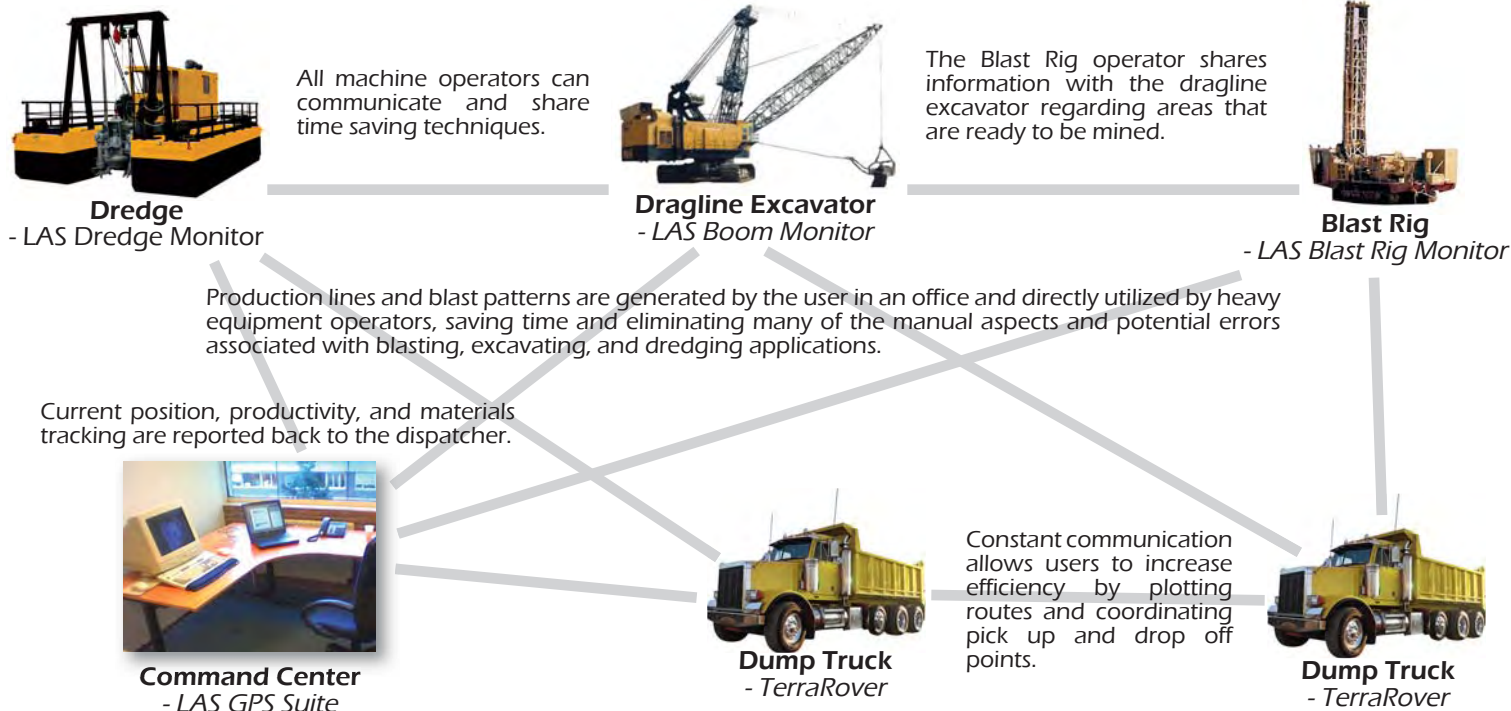
# NAVIGATION & PRODUCTIVITY TOOLS

## INTRODUCTION

Modern technology is rapidly changing the way business is conducted at all levels. The DataMetrics™ **TuffRider™** computer along with LogicAll Solutions software, will revolutionize the way aggregate and surface mining companies operate and create never before seen productivity and efficiency resulting in immediate profits. The **TerraRover GPS Systems** start with the DataMetrics™ **TuffRider™** computer. This ruggedized, touch-screen computer, is shock and vibration tested to withstand the harshest conditions, extreme temperatures, and is completely sealed to prevent sand, dust, and moisture from damaging the internal components. Next, the LogicAll Solutions software is added, which is specifically designed to be used by heavy equipment such as dredges, dragline excavators, and blast rigs for aggregate and surface mining operations. These software packages use GPS coordinates to assign production lines to follow and assign exact blasting patterns to assist field engineers. Additional navigation software can be used for any type of vehicle.

## EFFICIENCY / PRODUCTIVITY

Maximize the efficient processing of your resources with displays which help operators navigate and follow assigned production lines and blast patterns through the use of GPS data. Information displayed includes assigned production lines or blast patterns, current position, and distance of the boom tip or drill head from the current dig line, pile, or drill marker. Multiple unique production points or lines can be assigned to each system, eliminating the need to stop production to locate and mark the next point or line to follow. Production Lines or blast patterns can be assigned at a dispatcher's PC and then loaded to the equipment operators **TuffRider™** computer via USB drive.



## EASE OF USE

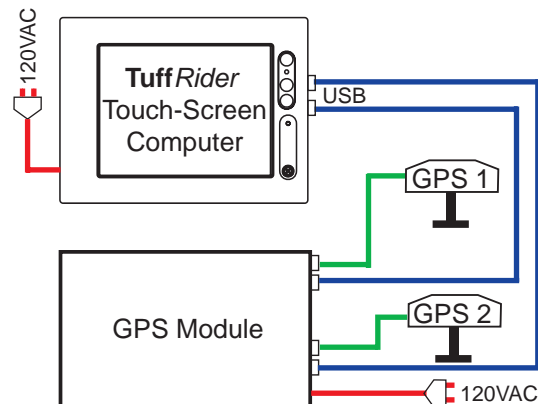
Hardware installation is painless and start-up is as simple as pushing the front power button on the computer and then entering your unique user id using the touch-screen display. Loading the production lines or blast patterns can be accomplished using the USB thumb drive which can be accessed on the front of the **TuffRider™** Computer or you can pick up where you left off on your last day of work. All the information needed to get the job done is presented on a 12" or 15" display using large, easy to read buttons and menus to access system functions.

## RELIABILITY

The **TuffRider™** computer is a ruggedized and completely sealed unit, with an IP 65 rating, that can stand up to the sand, dust, rain, and humidity found at mining operations. While other computers use fans to cool the internal components, the **TuffRider™** is convection cooled and completely fan less. This means you will never have a computer failure due to sand or moisture build up. Using the **TuffRiders™** modular design, repair times are dramatically reduced and production is stopped for only a matter of minutes. The modular design makes

it possible to replace either the display or computer component separately in the field in less than 5 minutes.

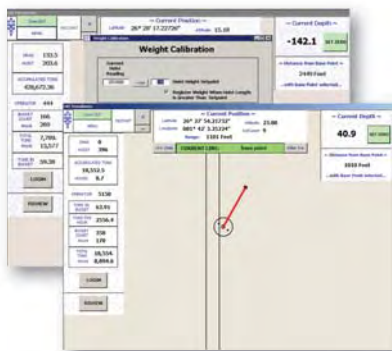
In addition to the modular sealed design, this computer is built to withstand the harshest environments. All units are designed and tested to withstand extreme levels of shock and vibration found in dredges, dragline excavators, and even blast rigs during blast pattern detonation. The frigid cold winter nights of a North Dakota coal mine or the stifling summer heat of a Florida phosphate mine are no match for the **TuffRider™**. With operating temperatures ranging from 32°F to 122°F and non-operating ranging from -40°F to 149°F this computer can withstand the most extreme conditions.



## SAFETY

Say goodbye to the old ways – no more need to have your employees trudging through the field manually marking places to drill and spotting for the rig driver as he moves into position. With the LAS GPS Systems, the production lines and blast patterns will be defined using GPS coordinates entered and stored in an easy to use database. Reducing the number of man hours and employees in the field equals a safer and more cost effective operation.

## LAS BOOM MONITOR SOFTWARE



The LogicAll Solutions (LAS) Boom Monitor is an innovative application designed for use by dragline cranes. The system monitors dual GPS receivers and displays the position and orientation of the boom real-time to assist operators to make the most effective and efficient use of their vehicle. If the dragline has a PLC system monitoring feedback from the hoist, the LAS Boom Monitor System can be upgraded to the LAS Dragline Monitor System

which can use this information to monitor and track tonnage produced. Production reports are available for on screen viewing and log files are easy to collect for reporting.

## LAS DREDGE MONITOR SOFTWARE



The LogicAll Solutions (LAS) Dredge Monitor is an innovative application for dredges and waterborne vehicles. The system monitors the GPS receiver and automatically calculates the current orientation of the dredge. Position and orientation are displayed real-time to assist operators to make the most effective and efficient use of their vehicle. If production lines are entered into the system, the vehicle's distance from the currently selected line is

automatically calculated and displayed on the screen. Additional points can be added to point out obstructions or other points of interest.

## LAS GPS SUITE



This application suite is installed on the dispatcher's PC to make the administration aspect of the LAS TerraRover GPS System as easy as possible. The LAS LineBuilder application allows the user to convert GPS coordinates from the common format of degrees-minutes-seconds to the format which the LAS TerraRover software uses. The coordinates can then be entered into the coordinate database located on the provided USB flash drive. The vehicle operator can then take the flash drive and update the system in his vehicle.

The LAS Coordinate Plotter can be used to read the coordinate database transferred from the vehicle using the LAS TerraRover GPS System. The vehicle operator's progress is plotted on a map and for each recorded interval the user can check the location, date, time, and can be used to verify operator productivity.

The LAS GPS Compass is a simple application which displays the current course of the vehicle. This application is intended to verify that the GPS unit connected to the PC is reading and reporting correctly. Once the vehicle is in motion, the current course will be displayed.

## TESTIMONIAL

*"Bigger buckets, new cables, operator training, we tried several different ways to increase the production rate of our dragline crane with little success. Nothing we tried would keep enough material on the pile to stay ahead of the crusher. We decided to try the Dragline Monitor system from LogicAll Solutions. With a large screen displaying the position of the dragline along with the count of buckets and tons being put on the pile, the operators could see the results of their work. The GPS part of the Dragline Monitor helped give us a better overview of the dragline's progress along the cut. Operators compared notes and shared techniques trying to get the Lead Operator position displayed on the main screen. The operator with the highest tons produced on their shift is automatically logged as the Lead Operator. Within weeks the dragline's production increased so much that we regularly had a three week lead on the crusher. LogicAll Solutions said that the Dragline Monitor was a tool to increase productivity, and that's exactly what it did."*

Paul Polakoff  
Southwest Florida Aggregate Operations

## LAS BLAST RIG MONITOR SOFTWARE



The LogicAll Solutions (LAS) Blast Rig Monitor is an innovative application for excavation equipment which monitors dual GPS receivers mounted to a blast/drill rig and automatically calculates and displays the current location of the drill shaft's center point. Position and distance to the currently selected drilling target are displayed real-time to assist operators to make the most effective and efficient use of the rig. A grid of drilling locations (waypoints) are

displayed on the screen with a cursor directing the operator's attention to the currently selected waypoint.

## TERRA ROVER SOFTWARE



This application shows the user's current position on a road map. The user can select a location from a predefined set of waypoints, click a button, and the system will plot out the fastest route to the chosen location. The user can record their current position as a new waypoint which can be selected later. Another function is that the system logs the user's progress at selectable intervals (five seconds to once every 24 hours) which can be brought





up by management to verify productivity or surveying purposes. This system can also be tied into a reporting system which can display the current location of multiple vehicles.

**GET THE JOB DONE RIGHT, THE FIRST TIME, ON TIME, EVERY TIME!**



Application and  
Equipment-Specific  
Aggregate Surface Mining  
Software Packages













## Packages Available

LAS Boom Monitor	LAS Blast Rig Monitor	LAS Dredge Monitor	LAS TerraRover
			

## Software

LAS System Specific Software	LAS Boom Monitor	LAS Blast Rig Monitor	LAS Dredge Monitor	LAS TerraRover
LAS GPS Suite Software (For Dispatcher)	<ul style="list-style-type: none"> <li>LAS Line Builder</li> <li>LAS Coordinate Plotter</li> <li>LAS GPS Compass</li> </ul>	<ul style="list-style-type: none"> <li>LAS Line Builder</li> <li>LAS Coordinate Plotter</li> <li>LAS GPS Compass</li> </ul>	<ul style="list-style-type: none"> <li>LAS Line Builder</li> <li>LAS Coordinate Plotter</li> <li>LAS GPS Compass</li> </ul>	<ul style="list-style-type: none"> <li>LAS Line Builder</li> <li>LAS Coordinate Plotter</li> <li>LAS GPS Compass</li> </ul>
Additional Software	<ul style="list-style-type: none"> <li>LAS Dual GPS Monitor</li> <li>LAS TerraRover Recovery Utility</li> <li>Microsoft MapPoint</li> <li>Windows XP</li> </ul>	<ul style="list-style-type: none"> <li>LAS Dual GPS Monitor</li> <li>LAS TerraRover Recovery Utility</li> <li>Microsoft MapPoint</li> <li>Windows XP</li> </ul>	<ul style="list-style-type: none"> <li>LAS GPS Monitor</li> <li>LAS TerraRover Recovery Utility</li> <li>Microsoft MapPoint</li> <li>Windows XP</li> </ul>	<ul style="list-style-type: none"> <li>LAS GPS Monitor</li> <li>LAS TerraRover Recovery Utility</li> <li>Microsoft MapPoint</li> <li>Windows XP</li> </ul>

## Hardware

TuffRider Computer	LAS Boom Monitor	LAS Blast Rig Monitor	LAS Dredge Monitor	LAS TerraRover
				
Screen Sizes	12.1" or 15" Touch-Screen	12.1" or 15" Touch-Screen	12.1" or 15" Touch-Screen	12.1" or 15" Touch-Screen
Processor	1.8 GHz Pentium M	1.8 GHz Pentium M	1.8 GHz Pentium M	1.8 GHz Pentium M
Memory	1 GB SDRAM	1 GB SDRAM	1 GB SDRAM	1 GB SDRAM
Hard Drive	8 GB 2.5" IDE Flash Hard Drive	8 GB 2.5" IDE Flash Hard Drive	8 GB 2.5" IDE Flash Hard Drive	8 GB 2.5" IDE Flash Hard Drive
Sand, Dust, Rain	Sealed Unit - IP65 Rated	Sealed Unit - IP65 Rated	Sealed Unit - IP65 Rated	Sealed Unit - IP65 Rated
Paint (Standard)	Gloss Black Powder Coat	Gloss Black Powder Coat	Gloss Black Powder Coat	Gloss Black Powder Coat
GPS Receivers				
	2 Sub-Meter Accuracy Receivers	2 Sub-Meter Accuracy Receivers	1 Sub-Meter Accuracy Receiver	1 Sub-Meter Accuracy Receiver
Cables	<ul style="list-style-type: none"> <li>2 TNC Cables for Antennas</li> <li>USB Cables for PC Connection</li> </ul>	<ul style="list-style-type: none"> <li>2 TNC Cables for Antennas</li> <li>USB Cables for PC Connection</li> </ul>	<ul style="list-style-type: none"> <li>TNC Cable for Antenna</li> <li>USB Cable for PC Connection</li> </ul>	<ul style="list-style-type: none"> <li>TNC Cable for Antenna</li> <li>USB Cable for PC Connection</li> </ul>
Accessories	<ul style="list-style-type: none"> <li>Computer Mounting Kit</li> <li>1 GB Flash Thumb Drive</li> </ul>	<ul style="list-style-type: none"> <li>Computer Mounting Kit</li> <li>1 GB Flash Thumb Drive</li> </ul>	<ul style="list-style-type: none"> <li>Computer Mounting Kit</li> <li>1 GB Flash Thumb Drive</li> </ul>	<ul style="list-style-type: none"> <li>Computer Mounting Kit</li> <li>1 GB Flash Thumb Drive</li> </ul>
GPS Module (Enclosure)				

## Ordering Numbers

Product	Part Number	Description
<b>LAS Boom Monitor</b>	9300-1240-1XX-P044 9300-1540-1XX-P044	12" Display Size TuffRider Computer/LAS Boom Monitor Software Package/Hardware Accessories 15" Display Size TuffRider Computer/LAS Boom Monitor Software Package/Hardware Accessories
<b>LAS Blast Rig Monitor</b>	9300-1230-1XX-P044 9300-1530-1XX-P044	12" Display Size TuffRider Computer/LAS Blast Rig Monitor Software Package/Hardware Accessories 15" Display Size TuffRider Computer/LAS Blast Rig Monitor Software Package/Hardware Accessories
<b>LAS Dredge Monitor</b>	9300-1220-1XX-P044 9300-1520-1XX-P044	12" Display Size TuffRider Computer/LAS Dredge Monitor Software Package/Hardware Accessories 15" Display Size TuffRider Computer/LAS Dredge Monitor Software Package/Hardware Accessories
<b>LAS TerraRover</b>	9300-1210-1XX-P044 9300-1510-1XX-P044	12" Display Size TuffRider Computer/LAS TerraRover Software Package/Hardware Accessories 15" Display Size TuffRider Computer/LAS TerraRover Software Package/Hardware Accessories