1 | Introduction

1.1 | Title

Level COMMAND™

Unleashed Precision in Landforming Control

Operation & User Manual

2026

1.2 | About Level COMMAND

Level COMMAND (**LC**) is a GNSS-based machine control software operating environment developed by T3RRA for construction, earthmoving, and landforming machinery.

Operating together with the **COMMAND** hardware platform, **Level Command** provides terrain visualisation, machine positioning, surface guidance, and automatic implement control for supported machine configurations.

Level COMMAND combines GNSS positioning, machine sensors, hydraulic control interfaces, and project design data to assist operators in achieving accurate terrain outcomes during grading and earthmoving operations.

Depending on machine configuration and enabled features, **Level COMMAND** may support:

- Terrain guidance
- Automatic blade control
- Plane and surface workflows
- Terrain surveying
- Benchmark and zeroing workflows
- Surface visualisation and cut/fill mapping

This manual describes operational workflows, machine-control concepts, commissioning procedures, calibration functions, and diagnostic tools associated with the **Level COMMAND** system.

1.3 | Intended Use

Level COMMAND is intended for use on supported construction, landforming, and earthmoving machinery equipped with compatible **COMMAND** hardware, GNSS receivers, hydraulic interfaces, and machine sensors.

The system is designed to assist operators with terrain guidance, grading operations, surface control, and automatic implement positioning during earthmoving and landforming activities.

System performance depends on:

- correct installation
- machine calibration
- GNSS signal quality
- terrain conditions
- hydraulic performance
- and operator supervision

Level COMMAND is an operator-assistance and terrain-control system. The operator remains responsible for safe machine operation, terrain awareness, and final work quality at all times.

The system must only be operated by personnel familiar with machine-control systems and safe equipment operating procedures.

1.4 | Important Notices

Level COMMAND Operators Manual

Notice of Rights

Trademark Notice

Notice of Liability

Disclaimer

resulting from use of the information contained within this manual. Information contained within this manual was current at the time of publication.

1.5 | Operator Responsibilities

System Usage

The **COMMAND** hardware platform and **Level COMMAND** operating environment must only be installed, commissioned, and operated by personnel familiar with machine-control systems and associated safety procedures.

Any safety warnings or images used in this manual should be closely observed to ensure safe usage of the **COMMAND** and **Level COMMAND** system. If any information provided in this manual is not understood by the technician or operator, they must contact T3RRA prior to usage of the system.

Operators are responsible for verifying correct system setup, terrain alignment, project selection, and machine response before engaging automatic control.

Prior to operation, verify:

- machine calibration,
- active project data,
- benchmark alignment,
- GNSS quality,
- and hydraulic response.

Automatic control functions should only be engaged after confirming safe and predictable implement movement. Operators must remain aware of terrain conditions, nearby personnel, and machine behaviour at all times during operation.

Technical Support

For technical support associated with **COMMAND** or **Level COMMAND**, please contact your authorised T3RRA dealer.

1.6 | Important Safety Information

General Safety Guidelines

Read and Understand Instructions

Operators must read this manual in full before using the system. Do not operate the system without a complete understanding of its controls and functions.

Authorized Personnel Only

Only trained and qualified individuals should operate, maintain, or service the **Level COMMAND** system.

Operator Responsibility

Level COMMAND is designed to assist with terrain-control and grading operations but does not replace operator supervision. The operator must remain alert and in control at all times.

Operational Safety

Supervise All Automated Movements

The implement may move automatically in response to terrain, sensor or control inputs.

Maintain Safe Distance

Never stand or allow others to stand near the implement, or hydraulic components while the system is engaged.

Manual Override

Ensure all operators are familiar with how to disengage or manually override the system in an emergency.

System Activation Warnings

Automatic Movement Hazards

> **The implement may move without manual input during automatic operation. Clear the area of personnel before activating the system.**

Hydraulic Pressure Hazards

> **This system operates using high-pressure hydraulic components. Do not inspect, service, or disconnect hydraulic lines while the system is active or pressurized. Use caution when working near hoses and actuators.**

Sensor and Signal Dependency

GNSS Dependency

The system relies on accurate GNSS input data. A degraded or lost signal can lead to incorrect implement height or tilt adjustments.

IMU Sensor Calibration

Degraded sensor data may cause unintended implement movement.

Terrain and Environmental Awareness

Inspect Field Conditions

The system cannot detect soft ground, underground obstacles, ditches, or debris. Manually inspect and clear the field before use.

Slope Limits

Avoid operating the system on steep or uneven terrain beyond rated slope specifications. Excessive tilt may cause tipping or unsafe implement engagement.

Maintenance Safety

Pre-Start Inspection

Before each operation, inspect all components, including hydraulic lines, sensor mounts, and electrical connections.

Lockout/Tagout for Servicing

Fully power down the tractor and disable the land levelling system before performing any maintenance.

Emergency Protocols

Emergency Stop

Ensure the operator is aware of the emergency stop mechanism location and function. Adhere to Tractor/Machinery emergency stop protocols and testing requirements.

Error Handling

If the system displays a fault code, sensor error, or warning alert, cease operation immediately and refer to the Troubleshooting section.

Bystander & Site Safety

No Passengers

Never allow anyone to ride on the implement or tractor while the system is operating.

Establish Exclusion Zone

Mark the working area clearly. Unauthorized personnel should remain clear of the worksite during automated operations.

Safety Labelling

Ensure all safety labels on the implement and control interface are clean, visible, and intact. Replace damaged or unreadable labels immediately.

1.7 | Terminology & Definitions

Armed

Automatic control is enabled and ready to assume implement control when engagement conditions are met.

Benchmark

A known reference position or elevation used to align or verify machine position relative to the active project or terrain surface.

Blade Shift

A temporary adjustment applied to blade height or cross-slope relative to the active design surface without modifying the underlying project data.

Control Mode

The active automatic control strategy used to determine how the implement responds relative to the target surface or terrain.

Current Height

The measured elevation of the controlled point at the machine’s current position.

Design Height

The elevation defined by the active project surface or plane at the machine’s current position.

Engaged

Automatic implement control is actively controlling hydraulic output to achieve the target surface or control objective.

GNSS

Global Navigation Satellite System data used to determine machine position, elevation, and terrain location.

Look Ahead

A predictive control function that anticipates upcoming terrain changes and adjusts implement response to improve surface accuracy and machine stability.

Marker

A user-defined reference point stored within a project for operational, surveying, or alignment purposes.

Original Height

The measured terrain elevation recorded before material movement or grading operations occur.

Plane

A mathematically defined flat grading surface generated using slope, elevation, and orientation parameters.

Position Quality

The estimated reliability of GNSS and sensor data used for terrain positioning and automatic control functions.

Project

The collection of surfaces, planes, linework, markers, terrain data, and operational settings associated with a worksite or job.

Surface

A terrain model or design representation used for guidance, visualisation, and automatic implement control.

Target Height

The elevation the system is attempting to achieve at the controlled point relative to the active surface or control mode.

Terrain Alignment

The process of aligning machine position and elevation relative to known terrain references, benchmarks, or project coordinates.

Zero

A positional or elevation offset applied to align the machine with known terrain or project reference data.