



Critical Solutions
International



RC-PACK

ROUTE CLEARANCE PLATFORM AUTONOMOUS CONTROL KIT

MANNED. UNMANNED. MISSION READY.

RC-PACK - ROUTE CLEARANCE PLATFORM AUTONOMOUS CONTROL KIT

Route clearance teams have the enormous challenge of maintaining pace with an evolving and growing IED threat while effectively providing freedom of maneuver for both tactical and combat units. In an effort to provide commanders with truly scalable capability, CSI has developed RC-PACK, a vehicle appliqué kit designed specifically to support route clearance operations. RC-PACK now allows engineers to adjust their mission posture based off of the threat environment, offering the full functionality of an autonomous vehicle with no interference to manned operations. The system is comprised primarily of mature commercial components, ensuring that users receive a reliable and proven yet cost effective solution. CSI's RC-PACK uses an open and configurable architecture to accommodate a range of route clearance vehicle platforms and payloads, enabling forward compatibility with future sensors and subsystems.

FEATURES

With RC-PACK, the Engineer gets the best of both worlds: the situational awareness and visual acuity of manned vehicle control combined with the safety and survivability of semi-autonomous operation.

Multiple Operating Modes Scalable mission capability enables commander to maximize mission effectiveness	<ul style="list-style-type: none"> Manned vehicle operation Tele-operation Semi-autonomous operation Quickly toggle between modes at the flip of a switch
Mission Planning Software Designed and integrated as a plug-in to third-party software; currently utilizes FalconView mission planning toolset	<ul style="list-style-type: none"> Save and rerun routes (breadcrumb navigation) Plot waypoints for navigating new routes Establish no-go zones Establish speed zones
Optimized Route Clearance Modes Automatic prioritization of software behaviors based on operator's current mission task	<ul style="list-style-type: none"> Automated workload distribution Reduced operator fatigue
Controller Agnostic Supports integration with multiple controllers for both mounted and dismounted operations	<ul style="list-style-type: none"> Dismounted robotic controller Laptop / mission planning computer Gamepad / steering wheel controller
Obstacle Avoidance Detects both stationary and moving objects in vehicle's movement path; enables operator to tailor an appropriate vehicle reaction	<ul style="list-style-type: none"> Pauses movement Alerts operator Provides operator with mission options <ul style="list-style-type: none"> Assume tele-operation Override obstacle alert Can automatically resume movement upon obstacle clearance
Safety Allows operator to customize behaviors in the event of loss of GPS or radio / data link	<ul style="list-style-type: none"> Continue on planned route until link reestablished Return to position of last link Return to starting position Controlled stop Emergency shutdown <ul style="list-style-type: none"> Service brake Parking brake Engine shutoff
Speed Optimized for doctrinal mounted route clearance speeds; tailorable to user mission requirements	<ul style="list-style-type: none"> Adjustable preset limits User input speed override options

PHYSICAL ATTRIBUTES

By incorporating proven off-the-shelf components, CSI has created a cost-effective, mature, and scalable system with the reliability and interoperability of a commercial product.

Streamlined Vehicle Integration No interference or obstruction to manned vehicle operation	<ul style="list-style-type: none"> Minimized interior space claim requirements Automotive control accessed from behind engine firewall
Situational Awareness Networked cameras supplement vehicle maneuverability and threat detection / interrogation	<ul style="list-style-type: none"> Wide-angle fixed cameras Pan-tilt-zoom (PTZ) camera Optional thermal and high-definition capability
On-Board Navigation System Inputs from multiple sensors are fused to provide real-time precision location	<ul style="list-style-type: none"> Multi-planar LIDAR Single-planar LIDAR GPS Inertial measurement unit Vehicle speed sensors

COMPATIBILITY

Every mission is unique. That is why CSI developed RC-PACK to be adaptable across vehicle platforms, controllers, and mission module payloads.

Open Digital Architecture Operates as a standalone system interfacing with vehicle and payload controls, health, diagnostics, and monitoring	<ul style="list-style-type: none"> CANbus (J1939) Ethernet
Subsystem and Accessory Control Provides operator with total subsystem functionality and payload control; managed across an on-board network hub	<ul style="list-style-type: none"> Route clearance payloads <ul style="list-style-type: none"> Sensors Interrogation capabilities Mitigation General mission enablers <ul style="list-style-type: none"> Remote weapons station Battle command / tracking system
Graphical User Interface (GUI) Intuitive interface mimics vehicle and payloads controls	<ul style="list-style-type: none"> Optimized virtual dashboard Incorporates all vehicle and subsystem gauges and controls
Interoperability Compatibility across platforms and C-IED mission equipment creates a force multiplier	<ul style="list-style-type: none"> Compatible with CREW/jammer systems Permits control of multiple vehicles using common architecture and GUI

CSI has already validated the maturity and reliability of RC-PACK through an integration onto the Husky MkIII vehicle. CSI conducted testing and live demonstrations of this integration for U.S. Army Engineers in 2013. The Husky has proven to be the most survivable vehicle in the Army's wheeled fleet and the optimal platform for sensor and payload delivery. Like the Husky vehicle itself, RC-PACK advances the state of route clearance technology, as well as personnel safety and survivability, by providing the option of robotic vehicle control in high threat environments.

ABOUT CSI

Founded in 1999, Critical Solutions International (CSI) provides platforms that detect and mitigate evolving threats for security forces worldwide.



Critical Solutions
International



This product is provided in collaboration with TORC Robotics and DCD Protected Mobility.