

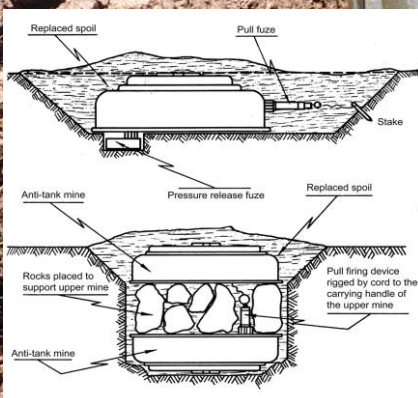
# UNMANNED MINE CLEARANCE BULLDOZER Product Brochure



## *Combat-Proven UGV Platform for High-Risk Environments* *Advanced Anti-Mine Warfare System*

*Designed to ensure maximum operator safety, mission efficiency,  
and reliable performance in active mine-contaminated zones.  
Field-proven in real-world conflict environments.*

*SDE Holding Co.,Ltd.*



SDE Holding Co., Ltd.



## Unmanned Bulldozer Platform for Anti-Mine Warfare

The Unmanned Bulldozer is a remotely operated, dual-mode (manned/unmanned) ground system based on a modified hydraulic bulldozer, engineered for mine clearance operations in high-risk environments. The system utilizes a powerful bulldozer which the high durable mine roller enabling extended operational envelope, high-precision positioning, and multi-angle engagement of suspected hazardous zones.

The platform supports dynamic operations through controlled articulation of blade, rake, mine roller and armor allowing scalable coverage patterns adaptable to terrain topology and mission requirements.

Integrated remote-control architecture supports beyond-line-of-sight (BLOS) operation via satellite communication systems (e.g., OneWeb and/or Starlink), with low-latency command and telemetry feedback.

*“Engineered for safety. Proven in the field. Trusted for mission success.”*





The Unmanned Bulldozer is specifically engineered for deployment in hazardous environments with restricted access, limited maneuvering space, and low ground-bearing capacity. The system performs effectively to open the safety way and is well-suited for operations in areas with a high concentration of anti-personnel and anti-tank landmines, supporting safe, precise, and controlled clearance activities





Photo from Caterpillar: CAT command

### Remote Command & Control Station

The Remote Command & Control Station enables operators to safely control unmanned ground vehicles (UGVs) from a protected stand-off location using secure radio communication or satellite broadband networks such as OneWeb and Starlink. designed for high-risk operations, the system provides real-time video monitoring, machine telemetry, and precision remote-control capability for mine clearance, excavation, earthmoving, and engineering missions in hazardous environments.

The operator interface integrates multiple high-definition camera feeds, machine status displays, and responsive control systems to ensure accurate situational awareness and safe maneuvering during mission execution.

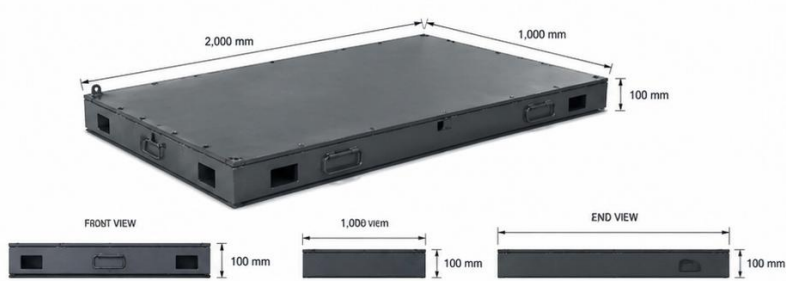
### The communication architecture supports:

- Long-range radio-frequency (RF) remote control
- Satellite broadband communication for beyond-line-of-sight (BLOS) operations
- Dual-network redundancy for improved operational reliability
- Emergency stop and signal-loss safety protection systems

The Remote Command & Control Station significantly reduces personnel exposure to land mines, unexploded ordnance (UXO), and hostile environments while maintaining efficient and precise equipment operation in the field.

### Key Features

- Real-time multi-camera monitoring
- Secure remote operation capability
- Radio and satellite communication support
- Low-latency control response
- Emergency stop and fail-safe protection
- Ruggedized operator environment
- Compatible with unmanned excavators and bulldozers
- Suitable for military and humanitarian demining operations



**Mine Detection Module**



**Mine Clearing Module**

<b>Anti Mine Operation – Technical Specifications</b>	
<b>Main Component</b>	
<b>Mine Clearing Module</b>	Roller set (Default) or Customer Designed (Option)
<b>Mine Detector Module</b>	Integrated electromagnetic field detection system
<b>CCTV Cameras</b>	8 HD Cameras
<b>Remote Control</b>	Radio and Coaxial Cable
<b>C2 Console</b>	C2 Software, Laptop Computer and Protection case
<b>Satellite Communication</b>	Optional
<b>Mine Clearing Module (Standard Rollers)</b>	
<b>Blast Survivability</b>	Designed to enhance survivability against anti-personnel and anti-tank mine blast effects.
<b>Maximum Sweep Radius</b>	0 - 4 m. (CAT 303cr)
<b>Width</b>	1.6 m.(CAT303cr.), 1.8 m. (CAT303.5 cr) and 2.0 m. (CAT305.5E2)
<b>Weight</b>	160 kg - 190 kg. (Can be reached to 4 m.)
<b>Roller diameter</b>	20 cm.
<b>Roller and Arms Material</b>	High-strength low-alloy (HSLA) steel with reinforced structural design
<b>Mine Detection Module</b>	
Number of Detectors	12
Detection Coverage	2 m <sup>2</sup>
Mine Marking	Color spay
Mine Location	GPS Position and Time stamp on customer tactical map
HD Camera units	2 Units on Stick with LED Lighting
Mine Location Photo Capture	Yes
Data recording	Mine Location, Date-Time, Photo capture
Data base structure	Microsoft Excel
<b>Ground Disturbance Module</b>	
Ground Disturbance Unit	2 Units' redundancy
Cameras	2 on the blade upper corner with LED lighting redundancy
<b>Safety path marker module</b>	
Safety path marker Module	2
Marker Line Indicator	Calcium Hydroxide (Lime)
<b>Mine Recovery Module</b>	
Mine Fuse removal Tools	Under development
Mine Recovery Tools	Under development

## Telecommunication Module

<b>Radio Control</b>	Professional Radio Control system 2.4 Ghz. Maximum Range 100 m.
<b>Back up Control</b>	RG-158 U or 50 Ohm. Coaxial Cable compatible 100 m.
<b>Back up Control</b>	1000 Base-SX 550m Multimode Fiber Optic TCP/IP IEEE 802.3z
<b>Beyond Line of Sight (BLOS) (Optional)</b>	Starlink or OneWeb with Cisco VPN.
<b>Emergency Stop</b>	Emergency Stop: Immediate engine shutdown
<b>Signaling Loss</b>	Fail-safe stop (machine stops movement while engine remains running)
<b>Engine Start/Stop</b>	From the remote operator or on-board operator

## Unmanned Bulldozer Model

<b>CAT D1</b>	UGV, for the mountain and rain forest mine detection and clearing, reduce risk to EOD personnel.
<b>CAT D2</b>	UGV, for the mountain and rain forest mine detection and clearing, reduce risk to EOD personnel.
<b>CAT D3</b>	UGV, for the mountain and rain forest mine detection and clearing, reduce risk to EOD personnel.
<b>CAT D4</b>	UGV, for the mountain and rain forest mine detection and clearing, reduce risk to EOD personnel.
<b>CAT D5</b>	UGV, for the mountain and rain forest mine detection and clearing, reduce risk to EOD personnel.
<b>CAT D6</b>	UGV, for the open flat area with wide scanning cost-effective operation and anti-tank-mine survivability



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