TOM™ 50 RE

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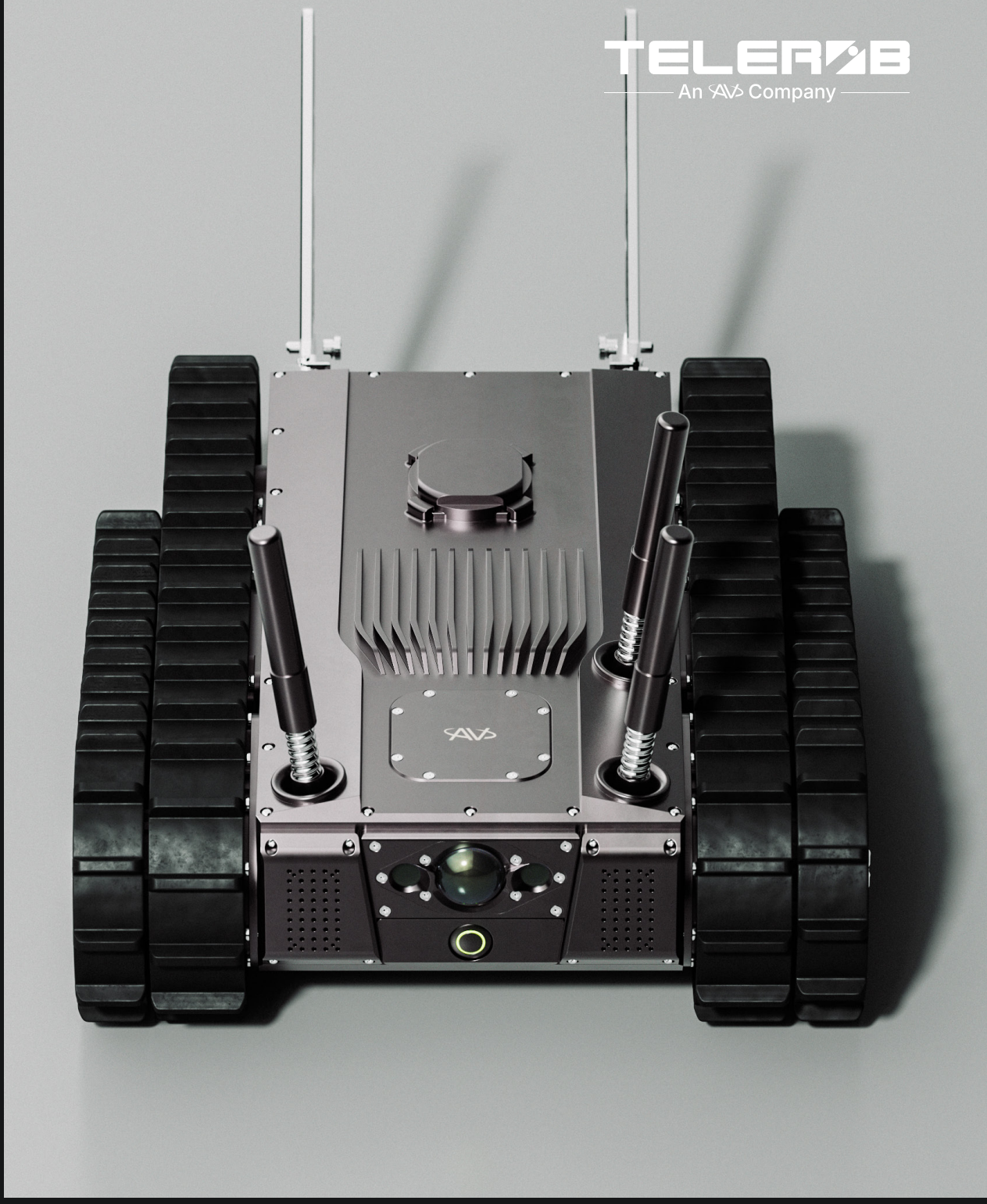

PRODUCT DESCRIPTION

MULTI-MISSION ROBOT TOM 50 RE

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MULTI-MISSION ROBOT TOM 50 RE

1 GENERAL

TOM 50 RE is a compact unmanned ground vehicle that can be carried in a backpack. It supports highly mobile units in complex and contested environments by ensuring immediate operational readiness. Its lightweight design, weighing less than 8 kilograms, enables transport and setup by a single operator. Thanks to its low weight, the system can be carried comfortably and discreetly even in tactical situations. It is ideal for mobile exploration as well as for quick and flexible reconnaissance. The four integrated wide-angle cameras provide a comprehensive overview and a high level of situational awareness. They offer a virtually seamless 360° panoramic view and, with the integrated pan-tilt-zoom function, also allow for a detailed examination of more distant areas. The cameras therefore contribute to reliable and precise decision-making, even under demanding operating conditions.

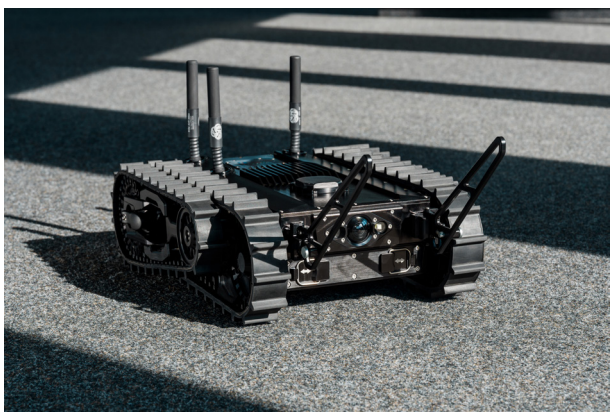
Another unique feature is the TOM 50 RE's rear camera, which is the only camera oriented vertically. This significantly expands the vertical field of view, which is a distinct advantage, particularly when inspecting vehicle underbodies.

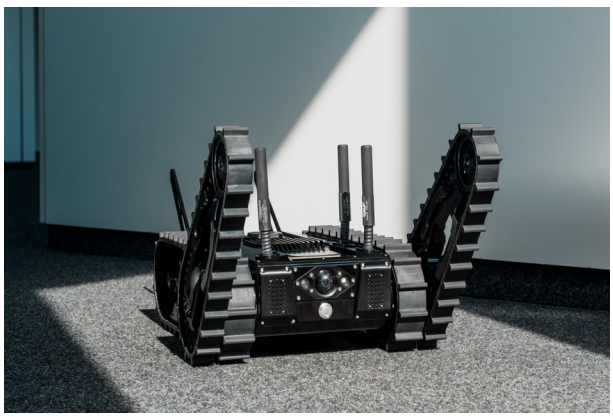
Its tracked mobility and stair-climbing flipper system allow it to navigate uneven terrain and multi-level structures.

Telerob's Modular Mission Interface (MMI) allows the system to be flexibly equipped with modern cameras, disrupters, and other mission-specific components. One example of this is the SLAM module, which enables continuous reconnaissance and mapping of multi-story buildings. The system autonomously creates detailed maps of interior spaces and provides valuable information for a comprehensive situational awareness as well as subsequent mission debriefing.

The system is also capable of defusing improvised explosive devices (IEDs) or mines when used in combination with a Disrupter or the Drop Charge mission module.

In use with other Telerob systems, the TOM 50 RE multi-mission robot can assist the operator by providing additional viewing angles and, as a mobile repeater, significantly extend the range of the other systems in the IP mesh wireless network. The robot can perform other important support functions, such as holding doors open for other Telerob EOD





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robots at building entrances, thereby facilitating access.

The control system options include either the well-known and proven Robo Command control station, with its intuitive and precise controls, or the Grip S20 control station, which stands out for its compact and lightweight design.

In addition, a GPS module and a two-way audio module are standard components of the system. This enables continuous positioning as well as direct voice communication with individuals in the operational area, for example during reconnaissance missions, negotiations, or the assistance of trapped individuals.

Highlights:

- Its compact design and light weight—less than 8 kg—make it easy to carry in a backpack and quick to set up
- Four 4K wide-angle cameras for full situational awareness
- Excellent mobility thanks to a track drive with controllable flippers
- Modularity provided by the MMI (Multi-Mission Interface) allows for adaptation to a wide variety of operational scenarios: reconnaissance, EOD, and CBRN
- Two different operating concepts available
- Simultaneous display of four video images (QuadView) when controlled via the Robo Command control station
- Option to use an existing Robo Command control station
- Integrated two-way audio
- Mechanical interface for transport on telemax EVO and tEODor EVO
- Complies with the electromagnetic compatibility requirements of the AECTP500 standard

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1.1 CHASSIS AND RUNNING GEAR

The TOM 50 RE multi-mission robot with a track drive system that allows for speeds of up to 6 km/h (3.8 mph). Depending on the task at hand, the operator can choose between different speed settings. This makes the operator's task much easier, especially when the multi-mission robot has to negotiate a narrow stairwell or high steps. With two optional flipper attachments, inclines of 45° or 100% can be handled without difficulty. With the flippers installed, obstacles up to 300 mm (11.8 in) high and trenches up to 400 mm (15.8 in) wide can be easily crossed. The flippers can be quickly and easily installed or removed without tools.

Safety brakes secure the multi-mission robot from rolling away when the robot comes to a halt on gradients and sloping terrain.

Sensors permanently inform the operator about the inclination of the multi-mission robot. If TOM 50 RE were to tip over, he could use his flipper to right himself.

1.2 CONTROL SYSTEM

The TOM 50 RE multi-mission robot can be controlled either via the Robo Command control station or via the Grip S20 control station. The Robo Command control station developed by Telerob features a high-resolution multi-touch screen and ergonomically designed 3-axis precision joysticks for intuitive and precise control of the robot.

Thanks to its compact and lightweight design, the Grip S20 control station is optimized for tactical operations in which the total weight of the system plays a crucial role. With the Grip S20, a fully operational system weighing less than 10 kg is available.

When operating in wireless mode, communication between the multi-mission robot and the control station takes place via IP Mesh radio that transmits encrypted signals in both directions. With a clear line of sight it is possible to attain ranges of up to 1,000 m (3,280 ft). Moreover, thanks to powerful transmitters, operations inside buildings do not pose a problem.



1.3 LOADING

There are two options for charging the TOM 50 RE multi-mission robot. First, the batteries can be charged individually in a charging cradle outside the robot. Alternatively, the batteries can be charged while they are installed in the multi-mission robot. To do this, connect a charger to the robot's charging port using the appropriate cable.

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1.4 CAMERAS AND INTERFACES

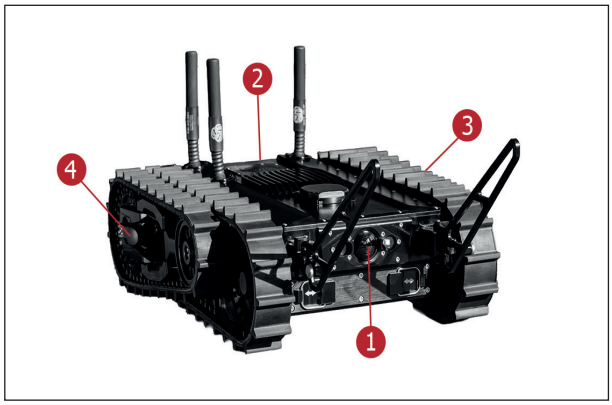

Figure: Cameras

1.4.1 CAMERAS

The TOM 50 RE multi-mission robot's chassis contains four high-quality 4K wide-angle cameras with built-in white light and IR lighting:

- Front camera (1)
- Rear camera (2), vertically aligned
- Left camera (3)
- Right camera (4)

All four built-in cameras feature pan, tilt, and zoom capabilities, allowing you to reliably detect even the smallest details in the surrounding area. Thanks to their high resolution, the cameras deliver excellent image quality even at high magnification.

In addition to the four standard cameras that are permanently integrated, another camera can be attached to the MMI (Mission Module Interface) in just a few seconds using an adapter. The high-resolution cameras already in use on telemax EVO EOD robot and tEODor EVO EOD robot—which have proven their worth—can be used for this purpose:

- HD PTZ camera day/night
- HD PTZ camera day/night with connection TEI
- 360° Camera

When used with the Robo Command control station, the TOM 50 RE features a Quad-View function that allows images from multiple cameras to be displayed simultaneously. This makes navigation and driving in confined spaces much easier. When operated via the Grip S20, two camera images can be displayed at the same time.

1.4.2 INTERFACES

The TOM 50 RE multi-mission robot features various interfaces:

- The main interface is the Mission Module Interface (MMI) on the top of the robot. A wide variety of mission modules and adapters can be attached to this interface.
- Two short Picatinny rails on the front of the robot. (In the illustration, the stair climbing attachments are mounted on the rails.)
- A mechanical interface on the underside of the chassis designed for the transport device on the telemax EVO EOD robot and tEODor EVO EOD robot.

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1.5 OTHER IMPORTANT CHARACTERISTICS

1.5.1 SAFETY CLUTCHES

The flipper‘s built-in slip clutch prevents overload and potential damage to the drive unit. When a safety clutch is triggered, e.g. after inadvertent collision with an obstacle, the flippers’ position is automatically recalculated and the system is immediately ready for operation again.

1.5.2 POWER SUPPLY

The lithium ion batteries meet IATA transport regulations (UN 38.3). The TOM 50 RE multi-mission robot can be equipped with up to two batteries. The batteries can be replaced while the device is running (hot-swap). Depending on the application, two batteries provide up to 6 hours of operation.



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2 TECHNICAL DATA

2.1 CHASSIS AND RUNNING GEAR

LENGTH	420 mm (16.5 in)
WIDTH	w/o flipper: 270 mm (10.6 in) w/ flipper: 337 mm (13.3 in)
HEIGHT	w/o antennas: 133 mm (5.2 in)
WEIGHT	w/o batteries and flipper: 7 kg (15.4 lb) w/ 2 batteries and flipper: < 10 kg (22 lb)
SPEED	> 6 km/h (3.7 mph)
DRIVE	track drive with two removable flippers
MOBILITY (STAIRS & SLOPES)	45° (depending on surface)
MOBILITY (OBSTACLE HEIGHT)	300 mm (11.8 in)
MOBILITY (GAP WIDTH)	400 mm (15.8 in)
PAYLOAD	5 kg (11 lb)
POWER SUPPLY	Li-ion battery: 25.2 V, 3.9 Ah; 655 g (1.4 lb)
TIME OF OPERATION	w/ 2 batteries: 6h passive, 3h active

2.2 OPTIONAL CAMERAS

HD PTZ CAMERA DAY/NIGHT WITH CONNECTION TEI	Color automatic focusing, zoom, day/night, 0.01 lx (F1.6, AGC on, 1/30s), 30 x optical zoom, Full HD (1920 × 1080), wide angle 63.7°, tele 2,3°, pan/tilt head, 6 white light LEDs, 6 infrared LEDs (LEDs infinitely variable)
360° CAMERA	Color, 30 x zoom, LED lighting (continuously switchable)

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2.3 CHARGER FOR EXTERNAL CHARGING

WEIGHT	200 g (0.4 lb)
INPUT	100 - 240 VAC

Technical data ±0,5% tolerance



2.4 POWER SUPPLY FOR INTERNAL CHARGING

WEIGHT W/O BATTERIES	560 g (1.2 lb)
INPUT	90 - 264 VAC

Technical data ±0,5% tolerance





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2.5 ADDITIONAL DATA

BTN NUMBER	84798997
END USER CERTIFICATE	Required

2.5.1 ELECTRICAL/ELECTRONICS

ELECTROMAGNETIC COMPATIBILITY (EMC)	EN 61000-6-2 EN 61000-6-3 AECTP 500

2.5.2 RADIO LINK

The network is self-configuring, i.e. the best connection is always selected automatically, e.g. via repeaters. The frequency range can be restricted on the software side if required.

NETNODE IP MESH RADIO	FREQUENCY BAND	1.14 ... 1.5 GHz 2.0 ... 2.5 GHz 4.4 ... 5.0 GHz
	BANDWIDTH	6 MHz
	TRANSMITTING POWER	1 W
MPU5 IP MESH RADIO	FREQUENCY BAND	1.35 ... 1.39 GHz 2.2 ... 2.5 GHz 4.43 ... 5.0 GHz
	BANDWIDTH	10 MHz
	TRANSMITTING POWER	10 W

2.5.3 AMBIENT OPERATING CONDITIONS

TEMPERATURE RANGE	-20°C to +60°C
IP RATING	IP 67
NOISE EMISSIONS	<82 dB(A)
CLEANING	Cleaning and decontamination with running water

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3 SCOPE OF DELIVERY SALES PACKAGES

3.1 PACKAGE 1: TOM 50 RE W/ FLIPPER

- Chassis with running gears
- A pair of removable stair climbing attachments
- A pair of removable flipper
- Integrated 2-way audio module
- Four built-in 4K wide-angle cameras, including white light and IR illumination
- Four Li-ion batteries
- Charger for external charging
- MMI adapter for UCI accessories
- Set of tools onboard
- Manual, illustrated parts catalog & test certificate

3.2 PACKAGE 2: TOM 50 RE

- Chassis with running gears
- A pair of removable stair climbing attachments
- Integrated 2-way audio module
- Four built-in 4K wide-angle cameras, including white light and IR illumination
- Two Li-ion batteries
- Charger for external charging
- Set of tools onboard
- Manual, illustrated parts catalog & test certificate

4 COMPULSORY COMPONENTS

Either Robo Command control station or Grip S20

4.1 ROBO COMMAND

- Communication unit with telescopic mast, power supply and battery
- Controller
- Radio equipment IP Mesh
- 3m cable (9.8 feet cable)
- Headset

4.1.1 ACCESSORIES FOR ROBO COMMAND

- Carrying strap
- Power supply with cable
- Power supply, vehicle

4.1.2 MMI ADAPTER FOR ROBO COMMAND

- Required only when using the multi-mission robot with the Robo Command control station to configure the wireless connection and transfer software updates

4.2 GRIP S20

- Controller
- Radio equipment IP Mesh
- Spare battery
- Power supply with cable



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5 OPTIONAL ACCESSORIES

The following optional accessories are available for multi-mission robot TOM 50 RE. The product description of the individual items is available separately upon request. We would be pleased to assist you with customized solutions or in integrating other systems.

If desired we also deliver the firing systems with the respective holders. Please note, in doing so, special regulations have to be met which might affect the delivery time.

5.1 FIRING SYSTEMS

- Mission module ABL 2000 L
  - *suitable for ABL 2000 L disrupter*
  - *Angle mechanically adjustable*
  - *Laser aiming system*
- Mission module NEEDLE PLUS
  - *suitable for Disrupter NEEDLE PLUS*
  - *Angle mechanically adjustable*
  - *Laser aiming system*
- Mission module Drop Charge
  - *enables the precise placement of objects, such as explosive charges*
  - *Triggered via radio or using Sansolo Rapid Coil*

5.2 CAMERAS

(only in combination with the U-adapter)

- HD PTZ camera day/night with connection TEI
- 360° Camera

5.3 MAPPING

- Mission module SLAM



5.4 CBRNE ACCESSORIES

(only in combination with the MMI adapter for UCI accessories)

- Holder RadEye
  - *suitable for RadEye PRD, SPRD, SPRD-GN and G-10*
- Holder LCD
  - *suitable for LCD 3.3*

5.5 ADDITIONAL ACCESSORIES

- Flipper (1 pair)
- Power supply for internal charging
- Li-ion battery for TOM RE 50
- Case spare parts
- Discharge plate for Drop Charge
- MMI adapter for UCI accessories

Subject to technical change without notice.