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# LEADER CAM MS 4

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**USAR kit comprising the MULTI-APP box and the following peripheral:**

- **1 CAM-RD90 - waterproof color camera fastened to 295 ft. cable**

## Developed with SAR specialists

LEADER MULTISEARCH (or MS) is used during SAR operations following a building collapse, to search for victims trapped under rubble in inaccessible areas or difficult-to-access confined spaces.

Included in the MULTISEARCH (or MS) kit, **the MULTI-APP control box allows you to connect 5 LEADER peripherals** (CAM, TIC, RD90, SEARCH, SCAN). The one included in this MULTISEARCH kit can be used **for various search options:**

- RD90, color camera waterproof to 295 ft. for a visual victim search

## Benefits

- MULTI-APP control box to alternately connect the peripherals included in the kit or optional peripherals
- 1 type of peripheral
- Ready-to-use peripheral for rapid deployment
- System which can be upgraded at any time!
- Intuitive navigation interface
- Kit placed in a shock-proof and waterproof case for transport and storage

## Kit composition & functions

LEADER CAM MS 4 COMPOSITION - Ref: D11.01.17	
<b>MULTI-APP control box</b>	1
Noise-cancelling headset	1
Antenna for wireless connection with peripherals	1
Sun shade	1
Neck strap	1
Battery	1
Charger	1
International adapter kit	1
Back-up battery pack (without battery)	1
Photos/Videos SD memory card	1
<b>CAM peripheral: Tilttable and removable color camera head</b>	optional
Sealed caps (camera seal accessory)	optional
<b>TIC peripheral: Tilttable and removable thermal imaging camera head</b>	optional
<b>12.1 ft. telescopic pole</b>	optional
Removable hinged arm (pole/box fastening)	optional
Pole strap	optional
Detachable handle	optional
<b>RD90 peripheral: Waterproof color camera fastened to 295 ft. cable</b>	1
<b>SEARCH peripherals: Wireless seismic listening sensors</b>	optional
Screw-in point under the sensor	optional
Screw-in magnet under the sensor	optional
<b>SCAN peripherals: Movement detection radar sensor</b>	optional
Interchangeable battery for SCAN peripheral	optional
SCAN peripheral battery charger with international adapters	optional
16.4 ft. USB cable for alternative wired connection to the control box	optional
Storage backpack	0
Watertight and shock-proof transport case	1
User guide	1

FUNCTIONS			
IN VISUAL SEARCH MODE WITH THE PERIPHERAL	RD90	CAM	TIC
x2 digital zoom	yes	optional	-
160x120px or 320x240px display	no	-	optional
Adjustment of speaker volume	no	optional	optional
Adjustment of microphone volume	no	optional	optional
Push to Talk	no	optional	optional
Adjustment of screen brightness	yes	optional	optional
Right or left-handed use	yes	optional	optional
Indication of battery charge level	yes	optional	optional
Indication of camera head rotation	no	optional	optional
Indication of camera head LED illumination level	yes	optional	-
Choice of 3 infrared color modes (Hot black, hot white, multicolor)	no	-	optional
Rotation of image up (0°) and down (180°)	yes	optional	optional
Taking photographs	yes	optional	optional
Video recording	yes	optional	optional
Photo and video gallery to view recordings/images	yes	optional	optional

FUNCTIONS	
<b>IN SEISMIC LISTENING MODE WITH THE PERIPHERAL</b>	<b>SEARCH</b>
Adjustment of headset(s) volume	optional
Adjustment of microphone volume	optional
Push to Talk	optional
Adjustment of screen brightness	optional
Right or left-handed use	optional
Adjustment of noise filters (low and high)	optional
Individual listening to each seismic sensor	optional
Mono or stereo listening mode (listening to sensors in 1 or 2 ears)	optional
Visualisation trackers* to identify the highest seismic peak	optional
Indication of wireless sensor charge level	optional
Indication of control box battery level	optional
Adjustment of headset(s) volume	optional
Adjustment of microphone volume	optional
<b>IN MOVEMENT DETECTION MODE WITH THE PERIPHERAL</b>	<b>SCAN</b>
Indication of the victim's depth	optional
Indication of weak or strong movements	optional
Oscillogram function to view the frequency of the detected movement (to determine whether it is a human or not).	optional
An arrow is positioned at the depth of the detected movement. This allows you to: <ul style="list-style-type: none"> <li>• Confirm movements in the selected search zone. (If it detects several movements, it will focus on the strongest movement)</li> <li>• Display the frequency of the detected movement.</li> </ul>	
AUTOMATIC search mode (automatic analysis of selected depth in 9.84 ft. sections) for rapid deployment. detects up to 10 living people by selecting a distance from 0 to 98.4 feet (1 person every 9.8 ft.): 0-9.8, 9.8 -19, ... 88.5 – 98.4 ft.	optional
REAL-TIME search mode (manual management by rescuer of different parameters to view real-time movements in a distance defined by the user)	optional
Selection of minimum search depth	optional
Selection of maximum search depth	optional
Save movement data	optional
Gallery of movement save files to replay them	optional
Option of wired or wireless box connection	optional
Indication of control box battery level	optional
Adjustment of screen brightness	optional
Right or left-handed use	optional
Indication of box connection status to sensor	optional

## Technical features

MULTI-APP CONTROL BOX	
Unique feature	Adjustable multi-application box which can be connected in turn to the 5 peripherals CAM, TIC, RD90, SEARCH and SCAN
Dimensions	W 9.4" x H 6" x D 2"
Weight	3 lbs. with removable battery
Wireless peripheral connections	- up to 3 SEARCH seismic sensors (328 ft. range in open space) - or 1 SCAN radar sensor (164 ft. range). - Removable antenna supplied to add range.
Wired peripheral connections	IP68-rated connectors to either connect the CAM color camera, the TIC thermal imaging camera, the RD90 waterproof color camera with 195 ft. cable on reel (option), but also the SCAN radar sensor in wired mode, and up to 2 headsets.

Screen size	7"
Screen	TFT-type LCD, 800 x 480 px WVGA, brightness 1000 candela/m2, LED backlighting, 16 bit RGB colors.
Box material	Polypropylene
Impact protection	Thick rubber bumper
Screen protection	Transparent thermoplastic plate: Clear PMMA 3 mm abrasion-resistant
Impact resistance	Drop test up to 78.7 ft.
Box ingress protection	IP54
Battery life (1 battery)	2.5 hours
Start-up time	Under 1 minute
Keyboard	Phosphorescent
Memory card	Removable 32GB micro SD card
Operating temperatures	14° to +140°F
Storage temperature	-40° to +158°F
Box/pole fastening	Box rear system to fasten the 'hinged arm' accessory and assemble the box and pole

### CONTROL BOX BATTERY

Reference	A battery included with the control box. Extra battery: D11.04.341.
Dimensions	W 2.6" x H 5.1" x D 1.2"
Weight	9.9 oz.
Type	4 Lithium-Ion Polymer cells (37 Wh)
Capacity	2500 mA.h
Battery life	2.5 hours
Recharge time	3.5 hours
Charging cycles	500
Charging temperature	32° to +113°F
Ingress Protection	IP54
Unique feature	Interchangeable battery with all MONO-APP and MULTI-APP boxes
Indication of battery level	Continually displayed on box screen

### CHARGER FOR CONTROL BOX BATTERY

Reference	Supplied with the control box. Replacement: 200 61 63
Charger dimensions	H 4.1" X D 1.8" X W 1.4"
Charger weight	7 oz.
Charger input voltage	100-240 VAC / 50-60 Hz
International adapters	UK, EU, AUS, USA

### BACK-UP BATTERY PACK FOR CONTROL BOX

Reference	Supplied with the control box. Replacement: 200 61 55
Dimensions	W 2.6" x H 5.1" x D 1.2"
Weight with batteries (not supplied)	10.6 oz.
Batteries used	10 AAA-LR03 lithium batteries
Battery life	Up to 2 hours depending on battery brand

### NOISE-CANCELLING HEADSET

Reference	1 headset supplied with the control box. Replacement: 200 63 82
Weight	Around 15 oz.
Sound type	Stereo
Built in microphone	Yes, to communicate with the victim in search camera mode.
NRR audio protection	Noise Reduction Rating: 23 dB

## RD90 - COLOR CAMERA WATERPROOF TO 295 ft.

Dimensions	Length 7.9" and diameter 2.1"
Reel dimensions	Reel: W 12.4" x H 14.8" x D 8"
Weight of camera and reel	2.6 lbs.
Cable	195 ft. orange anti-abrasion cable
Field of vision	90° (no head tilt)
Ingress Protection	Waterproof to a depth of 295 ft.
Lighting type	8 LEDs with 8 levels of illumination
Power	Via the control box once connected to it
Camera protection	Strong casing with extra-hard glass
Microphone/Speaker	No
Response frequency	300 Hz to 3500 Hz
Type of camera optics	Lens
Camera focal length	F = 3 mm fixed
Operating temperatures	14° to +140°F
Storage temperature	-40° to +158°F
Transport case	Yes. Waterproof and shock-proof. L 25.6" x W 20" x H 9.5" 23.5 kg loaded.

## Options & Accessories

### 2ND NOISE-CANCELLING HEADSET

Reference	additional headset: D11.04.340
Description	1 headset with microphone supplied with Y connector to connect 2 headsets to the box at the same time

### NECK STRAP

Reference	Supplied with the control box. Replacement: 200 63 03
Material	Woven fabric supplied with hooks to fasten to the 4 corners of the box
Length	47"

### HAND STRAP FOR CONTROL BOX

Reference	Supplied with the control box. Replacement: 200 61 97
Material	Woven fabric
Adjustment system	Velcro

### SUN SHADE FOR THE CONTROL BOX

Reference	Supplied with the control box. Replacement: D11.04.339
Material	Thermoformed foam with elastic straps for fastening to the box

### SEAL PLUGS FOR CAM AND TIC PERIPHERALS

Reference	Supplied with the TIC or CAM head. Replacement: 200 38 45
Function	Makes the camera head waterproof to a depth of 78.7 ft.
Material	Plastic + gasket

### CAM PERIPHERAL - COLOR CAMERA HEAD

Reference	D11.04.372
Dimensions	Length 12.8" and diameter 1.85" to pass through standard 2" drilling holes
Weight	1.8 lbs.
Camera tilt	170° (85° right and 85° left)
Field of vision	260° in total

Rotation type	Motorised electric rotation
Camera tilt control	From the control box
Ingress Protection	Yes, up to 78.7 ft. when the camera head is fitted with the plug (waterproof mode)
Lighting type	8 LEDs with 8 levels of illumination.
Camera protection	Scratch-proof sapphire glass
Microphone/Speaker	Built into the camera to communicate with the victim in half duplex mode
Response frequency	300 Hz to 3500 Hz
Type of camera optics	Lens
Camera focal length	F = 3 mm fixed
Camera range	90°
Operating temperatures	14° to +140°F
Storage temperature	-40° to +158°F

### TIC PERIPHERAL - THERMAL IMAGING CAMERA HEAD

Reference	D11.04.370
Dimensions	Length 13.1" and diameter 1.85" to pass through standard 2" drilling holes
Weight	1.8 lbs.
Camera tilt	170° (85° right and 85° left)
Power	Via the control box once connected to it
Camera tilt control	From the control box
Ingress Protection	Up to 78.7 ft. when the camera is fitted with the plug (waterproof mode)
Camera protection	Germanium window
Field of vision (FOV)	Camera eye= horizontal 56° & diagonal 71° / Total (camera eye + tilt)= 226°
Microphone/Speaker	Built into the camera to communicate with the victim in half duplex mode
Response frequency	300 Hz to 3500 Hz
Infrared sensor type	VOx microbolometer
Sensor frequency	8.8 Hz
Temperature range	32°F to 248°F
Sensor resolution	160 x 120 px
Spectrum range	Long-wave infrared, 8 µm to 14 µm
Thermal sensitivity	<50 mK (0.050°C)
Operating temperatures	14° to +95°F
Storage temperature	-40° to +158°F

### TELESCOPIC POLE

Reference	D11.04.373 (includes pole, hinged arm, shoulder strap and detachable handle)
Material	Carbon fibre
Length	Folded: 3.6 ft. / Unfolded: 12.1 ft. including TIC or CAM head
Weight	3.7 lbs. pole alone, 5.5 lbs. with CAM or TIC head
Pole/camera connector	IP67 (head connected)
Camera head locking to pole	Screw-in lockable ring once the camera head is connected to secure the connection
Detachable handle	Yes
Pole/box fastening system	Yes, built-in location on the top of the pole to fasten the supplied hinged arm to fasten the box to the pole.
Shoulder strap fastening	2 rings on the pole to fasten the shoulder strap.

### REMOVABLE HINGED ARM FOR CONTROL BOX

Reference	Supplied with the telescopic pole. Replacement: 200 66 21
Function	System to fasten the box to the pole
Material	Rigid hinged metal spring
Weight	8.8 oz.

### 82 ft. EXTENSION LEAD FOR CAM AND TIC PERIPHERALS

Reference	Single 82 ft. extension lead (D11.04.356D) to supplement an existing kit.
Description	82 ft. orange anti-abrasion cable. Built-in metal connectors. Supplied without specific packaging.
Transport case	No
Weight	5.2 oz.

### R90 - 195 ft. EXTENSION LEAD FOR CAM AND TIC PERIPHERALS

Reference	195 ft. extension lead on reel (D11.04.348D) to supplement an existing kit.
Description	195 ft. orange anti-abrasion cable on a reel. Built-in waterproof metal connectors.
Transport case	Yes. Waterproof and shock-proof. L 25.6" x W 20" x H 9.5" 5 lbs. loaded.
Dimensions & weight of the option	Reel: W 12.4" x H 14.8" x D 8", 2.5 lbs.

### SCAN PERIPHERAL - MOVEMENT DETECTION RADAR SENSOR

Reference	- D11.07.020: Radar sensor only (no battery or charger) - D11.07.025: Radar sensor + accessories (USB cable, battery, charger, backpack) + case
Technology	UWB: Ultra Wide Band
Dimensions	16.4" x 8.7" x 13.1"
Weight (including battery)	14.8 lbs.
Power	1 Li-Ion battery supplied (DUO-C98)
Search modes	Real-time (manual) or automatic
Search distance	98.4 ft. in open space for strong movements and 32.8 ft. for weak movements
Accuracy	Around 3.6 ft.
Type of box connection	<ul style="list-style-type: none"><li>• Wi-Fi connection to the box, with over 164 ft. range in open space: Eliminates the need for cable management in rubble.</li><li>• Sealed USB connection with 16.4 ft. cable supplied in the event of surrounding interference preventing the use of Wi-Fi.</li></ul>
Indication of battery level	Visible on the outside of the sensor

### SCAN PERIPHERAL BATTERY

Reference	Supplied with the SCAN sensor. Replacement: D11.07.015
Dimensions	W 3.8" x H 5.75" x D 1.5"
Weight	1.3 lbs.
Type	Li-Ion Endura DUO-C98
Capacity	4.9A / 59W
Battery life	5 hours
Recharge time	4 hours
Charging cycles	500
Charging temperature	32° to 104°F
Interchangeable	yes
Indication of battery level	yes, on battery

### CHARGER + TRANSFORMER FOR SCAN PERIPHERAL BATTERY

Reference	Supplied with the SCAN sensor. Replacement: D11.07.016
Charger dimensions	H 3.25" X D 5.6" X W 1.1"
Charger weight	12.7 lbs.
Charger input voltage	100-240 VAC / 50-60 Hz
International adapters	UK, EU, AUS, USA

## SEARCH PERIPHERAL - WIRELESS SEISMIC SENSOR

Reference	D11.04.335
Dimensions with antenna	Height 8.3" x Diameter 3.5"
Weight	29.6 lbs. with batteries
Unique features	Wireless connection. Up to 3 sensors each with 328 ft. range in open space
Sensor/control box communication frequency	2.4 GHz
Sensor ingress protection	IP67
Impact resistance	yes
Audio response frequency	1 Hz to 3000 Hz
Power	3 AAA alkaline batteries - LR03
Battery life	Around 8 hours depending on battery brand
Fastening accessory	1 point and 1 magnet supplied with each sensor
Individual control of each sensor from the box	Each sensor can be listened to alone or simultaneously with other connected sensors
Anti-noise filters which can be adjusted from the box	Low-pass filter: Eliminates high-pitched noise. Adjustable from 600 to 3000 Hz High-pass filter: Eliminates low-pitched noise. Adjustable from 20 to 300 Hz
Mono or Stereo listening mode	To listen to selected sensors in both ears or in the right or left ear
Visualisation trackers on screen	Yellow trackers below each bar chart to identify signal intensity peaks. A red tracker identifies the highest seismic peak by staying on the screen for slightly longer.

## POINT FOR SEARCH PERIPHERAL

Reference	Supplied per unit with each sensor Replacement: 200 31 13
Function	Allows the use of a sensor on soft ground
Material	Steel

## MAGNET FOR SEARCH PERIPHERAL

Reference	Supplied per unit with each sensor. Replacement: 200 35 14
Function	Allows the use of a sensor on metal debris
Material	Steel

## Equipment packaging and storage

Each kit is packed in 1 or 2 backpacks, placed in 1 or 2 rigid and waterproof cases.  
See *dedicated data sheet* to see the number, dimensions and weight.

## Warranty

### WARRANTY

Device	2 year warranty excluding accessories
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