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# LEADER HASTY MS 2

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

- **1 CAM - colour camera,**
- **3 SEARCH - wireless seismic sensors.**

## 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). Those included in this MULTISEARCH kit can be **used for various search options** by connecting the appropriate peripheral:

- CAM for a visual victim search,
- SEARCH to listen for sound made by the victim and their location.

## Benefits

- MULTI-APP control box to alternately connect the peripherals included in the kit or optional peripherals
- 4 types of peripheral adapted to various search situations by connecting the appropriate peripheral
- Ready-to-use peripherals for rapid deployment
- System which can be upgraded at any time!
- Intuitive navigation interface
- Kit packed in backpacks to make it easier to carry in the field
- Kit placed in shock-proof and waterproof cases for transport and storage

## Kit composition & functions

LEADER HASTY MS 2 COMPOSITION - Ref: D11.01.06	
<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 colour camera head</b>	1
Sealed caps (camera seal accessory)	3
<b>TIC peripheral: Tilttable and removable thermal imaging camera head</b>	optional
<b>3.7 metre telescopic pole</b>	1
Removable hinged arm (pole/box fastening)	1
Pole strap	1
Detachable handle	1
<b>RD90 peripheral: Waterproof colour camera fastened to 90 metre cable</b>	optional
<b>SEARCH peripherals: Wireless seismic listening sensors</b>	3
Screw-in point under the sensor	3
Screw-in magnet under the sensor	3
<b>SCAN peripherals: Movement detection radar sensor</b>	optional
Interchangeable battery for SCAN peripheral	optional
SCAN peripheral battery charger with international adapters	optional
5 m USB cable for alternative wired connection to the control box	optional
Storage backpack	1
Watertight and shock-proof transport case	1
User guide	1

FUNCTIONS			
IN VISUAL SEARCH MODE WITH THE PERIPHERAL	CAM	TIC	RD90
x2 digital zoom	yes	-	optional
160x120px or 320x240px display	yes	optional	-
Adjustment of speaker volume	yes	optional	-
Adjustment of microphone volume	yes	optional	-
Push to Talk	yes	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	yes	optional	-
Indication of camera head LED illumination level	yes	-	optional
Choice of 3 infrared colour modes (Hot black, hot white, multicolour)	yes	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	yes
Adjustment of microphone volume	yes
Push to Talk	yes
Adjustment of screen brightness	yes
Right or left-handed use	yes
Adjustment of noise filters (low and high)	yes
Individual listening to each seismic sensor	yes
Mono or stereo listening mode (listening to sensors in 1 or 2 ears)	yes
Visualisation trackers* to identify the highest seismic peak	yes
Indication of wireless sensor charge level	yes
Indication of control box battery level	yes
Adjustment of headset(s) volume	yes
Adjustment of microphone volume	yes
<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). An arrow is positioned at the depth of the detected movement. This allows you to:	optional
<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 3-metre sections) for rapid deployment. Detects up to 10 living people by selecting a distance from 0 to 30 metres (1 person every 3 metres): 0-3, 3-6, ... 27-30.	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 24 x H 15.2 x D 5.1 cm
Weight	1.4 kg with removable battery
Wireless peripheral connections	<ul style="list-style-type: none"> <li>- up to 3 SEARCH seismic sensors (100 m range in open space)</li> <li>- or 1 SCAN radar sensor (50 m range).</li> <li>- Removable antenna supplied to add range.</li> </ul>
Wired peripheral connections	IP68-rated connectors to either connect the CAM colour camera, the TIC thermal imaging camera, the RD90 waterproof colour camera with 90 m 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 colours.
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 2 metres
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	-10° to +60°C
Storage temperature	-40° to +70°C
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 6.5 x H 13 x D 3 cm
Weight	280 g
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	0° to +45°C
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 10.5 X D 4.5 X W 3.5 cm
Charger weight	200 g
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 6.5 x H 13 x D 3 cm
Weight with batteries (not supplied)	300 g
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 430 g
Sound type	Stereo
Built in microphone	Yes, to communicate with the victim in search camera mode.
NRR audio protection	Noise Reduction Rating: 23 dB

## CAM PERIPHERAL - COLOUR CAMERA HEAD

Dimensions	Length 326 mm and diameter 47 mm to pass through standard 51 mm drilling holes
Weight	800 g
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 2 metres 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	-10° to +60°C
Storage temperature	-40° to +70°C

## TELESCOPIC POLE

Material	Carbon fibre
Length	Folded: 1.1 m / Unfolded: 3.7 m including TIC or CAM head
Weight	1.7 kg pole alone, 2.5 kg 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.

## SEARCH PERIPHERALS - WIRELESS SEISMIC SENSORS

Dimensions with antenna	Height 212 mm x Diameter 90 mm
Weight	840 g with batteries
Unique features	Wireless connection. Up to 3 sensors each with 100 m 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.

## 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	120 cm

### 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

### REMOVABLE HINGED ARM FOR CONTROL BOX

Reference	Supplied with the control box. Replacement: 200 66 21
Function	System to fasten the box to the pole
Material	Rigid hinged metal spring
Weight	250 g

### TIC PERIPHERAL - THERMAL IMAGING CAMERA HEAD

Reference	D11.04.370
Dimensions	Length 335 mm and diameter 47 mm to pass through standard 51 mm drilling holes
Weight	810 g
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 2 metres 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	0°C to 120°C
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	-10° to +35°C
Storage temperature	-40° to +70°C

### SEAL PLUGS FOR CAM AND TIC PERIPHERALS

Reference	Supplied with the TIC head. Replacement: 200 38 45
Function	Makes the camera head waterproof to a depth of 2 metres

Material	Plastic + gasket
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### 25 M EXTENSION LEAD FOR CAM AND TIC PERIPHERALS

Reference	Single 25 m extension lead (D11.04.356D) to supplement an existing kit.
Description	25 m orange anti-abrasion cable. Built-in metal connectors. Supplied without specific packaging.
Transport case	No
Weight	2.35 kg

### R90 - 90 M EXTENSION LEAD FOR CAM AND TIC PERIPHERALS

Reference	90 m extension lead on reel (D11.04.348D) to supplement an existing kit.
Description	90 m orange anti-abrasion cable on a reel. Built-in waterproof metal connectors.
Transport case	Yes. Waterproof and shock-proof. L 65 x W 51 x H 24.2 cm. 23 kg loaded.
Dimensions & weight of the option	Reel: W 31.6 x H 37.5 x D 20.5 cm, 11.4 kg

### RD90 - COLOUR CAMERA WATERPROOF TO 90M

Reference	D11.04.347
Dimensions	Length 200 mm and diameter 54 mm
Reel dimensions	Reel: W 31.6 x H 37.5 x D 20.5 cm
Weight of camera and reel	11.9 kg
Cable	90 m orange anti-abrasion cable
Field of vision	90° (no head tilt)
Ingress Protection	Waterproof to a depth of 90 m
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	-10° to +60°C
Storage temperature	-40° to +70°C
Transport case	Yes. Waterproof and shock-proof. L 65 x W 51 x H 24.2 cm. 23.5 kg loaded.

### 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	41.7 x 22.1 x 33.4 cm
Weight (including battery)	6.7 kg
Power	1 Li-Ion battery supplied (DUO-C98)
Search modes	Real-time (manual) or automatic
Search distance	30 m in open space for strong movements and 10 m for weak movements
Accuracy	Around 1 metre
Type of box connection	<ul style="list-style-type: none"> <li>• Wi-Fi connection to the box, with over 50 m range in open space: Eliminates the need for cable management in rubble.</li> <li>• Sealed USB connection with 5 m 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 9.7 x H 14.6 x D 3.8 cm
Weight	621 g
Type	Li-Ion Endura DUO-C98
Capacity	4.9A / 59W
Battery life	5 hours
Recharge time	4 hours
Charging cycles	500
Charging temperature	0 to 40°C
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 8.3 X D 14.2 X W 2.8 cm
Charger weight	360 g
Charger input voltage	100-240 VAC / 50-60 Hz
International adapters	UK, EU, AUS, USA

### 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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