

MS-96 - Backpack Kit

USER MANUAL

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1 BACKPACK KIT

The Backpack Kit includes:

- An adjustable backpack-style harness
- A carry bag

The backpack harness can cover a large majority of pedestrian applications (pedestrian paths, indoor surveys, industrial surveys, etc.), but also motorized applications as presented below.

2 SET-UP



This chassis is adjustable to fit any type of body type and size.

1. The operator starts by assembling the stem on the bar, and tightens the knob to prevent the stem from being disassembled.
2. Once attached, the operator makes the morphological adjustment by changing the shoulder strap/belt spacing (Cf. Figure 1/Figure 2Figure Figure 3) and making sure you have enough space between the top of the head and the stem.
3. Once set, a ruler on the bar allows you to quickly reproduce the settings next time
4. The operator can then attach the remote box to the intended location and connect the cable between the remote box and the *SmartConnect*
5. Once harnessed, the operator can position the scanner on its stand
6. The operator can then lock the *SmartConnect* to secure the system on the stand



Figure 1: Shoulder harness positioned too high



Figure 2: Shoulder harness positioned too low. The curvature of the harness does not hug the shoulder

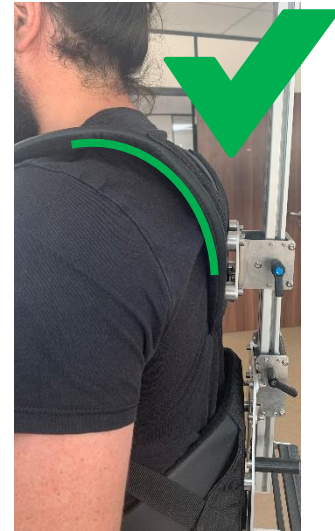


Figure 3: Properly positioned shoulder harness conforms to the curvature of the shoulders for maximum support and comfort

2.1 USAGE DIAGRAM

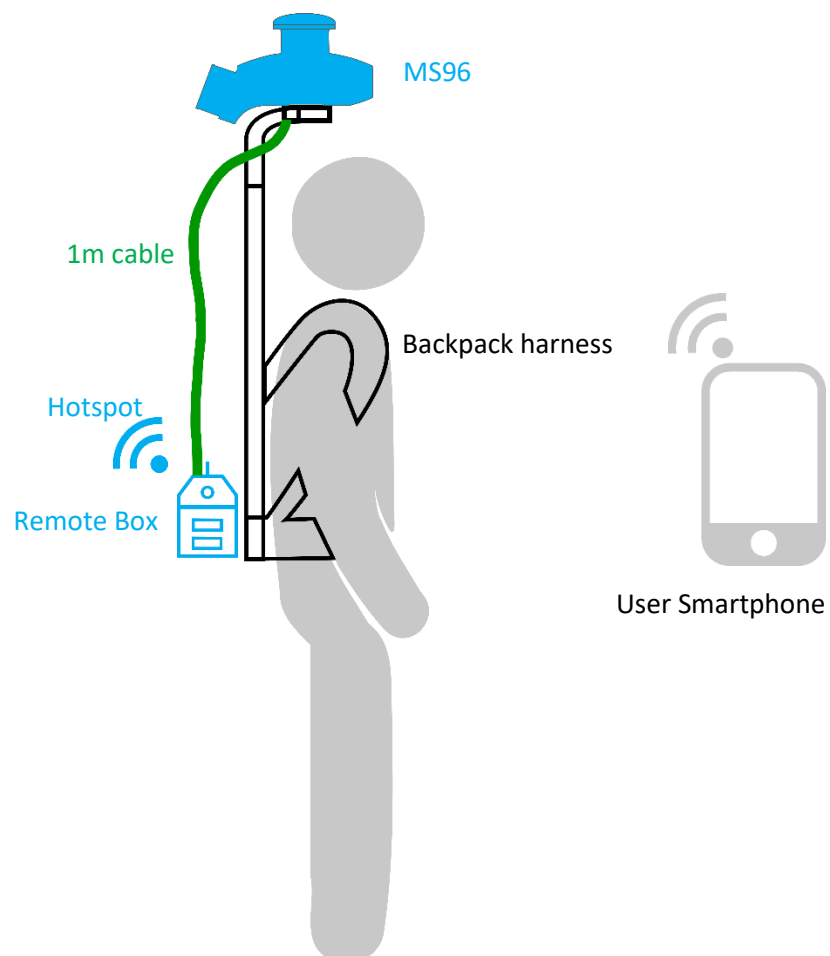


Figure 4: Backpack configuration

The operator checks the overall height and ability to pass through doorways or any other obstacles that may be encountered on the way.



Be careful, an individual on the move may require a few centimetres more than an individual at a standstill, always provide a few centimetres of safety.

2.2 USE IN OUTDOOR MOTORIZED MODE

It is possible to use the system while moving on a vehicle such as: electric scooter, electric tricycle, pendulum vehicle.

The operator will take responsibility for the training required to master the machine when carrying the system on his back.

The fact of motorizing the operator in outdoor conditions then makes it possible to activate a particular calculation mode in the Qinertia® tracking software from SBG-Systems®.

To optimize the calculation, it is recommended that you follow a particular procedure several times throughout an active project (session).

- This procedure, which we will refer to as the "**high dynamics**" procedure, is described below:
- The operator is heading to an **environment with very good GNSS coverage** (no masks, no vegetation, as far away from buildings as possible), ideally a parking lot
- Dynamic phase:
 - o Accelerate sharply to reach a speed of more than 15 km/h, and then decelerate
 - o Make relatively tight left and right turns
 - o This procedure may take about **2 minutes**

This procedure should be followed at the beginning and end of the work session:

- Once a project has started and started, the operator performs the **high-dynamics procedure**.
- Then, at a standstill, the operator starts the scan, having a clear dynamic, deceleration and acceleration at each intersection,
- The operator can stop his scan and resume it as many times as he wants (if during the same project session the operator is static for several minutes without scanning, it is recommended to repeat the **high dynamic range** procedure before starting a new scan),
- Before stopping the project, the operator performs the **high-dynamics procedure one last time**

Safety instructions specific to each mode of locomotion apply.

It is the user's responsibility to ensure compliance with the legislation concerning these modes of locomotion.

It is not recommended to change the mode of locomotion during the same scan. If this is an operational imperative, then we recommend performing two scans with suitable overlap areas.

3 RECOMMANDATIONS

3.1 ON-SITE PREPARATION

- Explore, discover the scan area in order to anticipate your trajectory
- Predict the trajectory in order to optimize the operation with the trajectory overlap to optimize the loop search

- Indoors:
 - o Open each door in advance for easy scanning
 - o Properly illuminate each room to get the best possible shots
 - o Make sure you have access to all the rooms and areas provided for in the scan (locks, code access, etc.) as well as the availability of the parts to be scanned (meetings, etc.)

3.2 OUTDOOR EVENTS

The MS-96 is a high-performance system that uses state-of-the-art components. However, certain precautions must be taken in terms of use: despite very sophisticated algorithms, measurements can be altered if the personnel accompanying the system are not well placed in relation to the operator.

We remind you that the system is not designed to operate under the following climatic or environmental conditions:

- Rain or other precipitation
- Dense dust
- Saturated humidity

3.3 LIGHTNING CONDITIONS

In the case of a dark indoor environment, the MS-96 system has lighting to illuminate the scene. The dash cams are tuned to achieve the best possible result, so the camera settings adapt to the external conditions. However, some situations may involve some trade-offs. It is therefore advisable to reduce the walking speed to avoid the blur of moving the cameras.

CAUTION#1. Even with lighting, some indoor environments may require system lighting to be turned on to maximize the amount of light available.

3.4 HOW TO GET AROUND - TRAJECTORY

In addition to the recommendations listed so far, it is important to move along a trajectory that is as linear as possible in order to optimize the quality of the measurement. The constancy and regularity of displacement will produce a data with a constant distribution of points in space and therefore a better reading/exploitation.

It is also very important to avoid sudden movements that can disturb the calculation of the trajectory (jumping, sudden acceleration, rapid pivot on oneself, etc.):

- Optimize the radius of curvature of the trajectory by widening it as much as possible
- Steady speed: normal, smooth walking
- Indoors, close the loop by taking an additional tour of the site once the detailed tour (piece by piece) has been completed
- Outdoors, provide loops on the operator's circuit
- In the case of street bodies, favour the overlap by crossing the roadway as much as possible to maximize the completeness of the survey and the loop closure

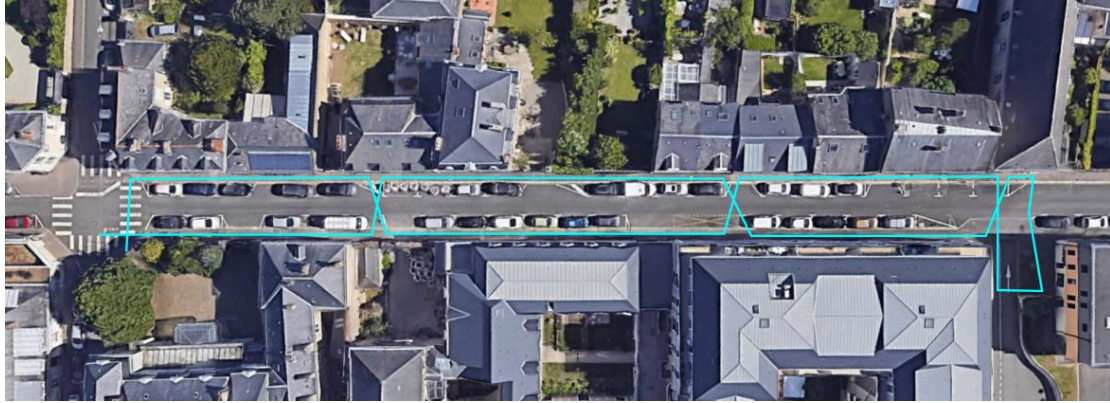


Figure 5: Walkway in blue on a street with forced overlapping

3.5 OBSTACLES ON SITE

On-site staff can continue to circulate normally without interfering with the measure, but favour quieter moments to limit masks

If a scout is assisting with the measurement, the scout should not stay in close proximity to the operator as its own position could interfere with the measurements.

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