

WORK SMARTER



microdrones®







PROFESSIONAL DRONE PACKAGES

Your UAV plus everything else you need. In one convenient package.





At Microdrones, our goal is always to empower you to deliver the best possible work while cutting costs, saving time, and completing projects more easily. mdSolutions were developed with the realities of your job in mind.

Our mdMapper packages combine industry-leading UAVs with payloads that were specifically designed for industrial applications like surveying, mapping, inspection, construction, mining, volumetrics, and precision agriculture. These packages and kits provide complete solutions that include aircraft, sensors, accessories, custom mounts, and even an Android tablet app that makes it easy to plan, monitor, adjust, and analyze your missions anywhere.

We've taken the guesswork out of the process so you are ensured a perfectly integrated aerial solution that performs flawlessly from start to finish.

WHICH ONE IS RIGHT FOR YOU?



mdMAPPER200

Compact but robust, the md4-200 aircraft at the heart of this solution is lightweight and easy to transport – yet tough enough to stand up to rough weather and daily use.

QUICK SPECS

- Payload: up to .6 pounds (250 grams)
- Flight time: up to 25 minutes depending on conditions
- Area covered in one battery charge: up to 74 acres (30 hectares)
- Sensor: Minimum 18.2 megapixel camera with custom nadir mount
- Georeferencing method: Aerial triangulation with GCP



mdMAPPER1000

Featuring our hard-working md4-1000 UAV to cover more area per flight, users enjoy the longest flight time on the market, superb stability, and resistance to rough winds, harsh weather, hot temperatures, high voltage, and strong magnetic fields.

QUICK SPECS

- Payload: up to 2.7 pounds (1.2 kilograms)
- Flight time: up to 45 minutes depending on conditions
- Area covered in one battery charge: up to 148 acres (60 hectares)
- Sensor: Sony a6300 (24-megapixel camera) and nadir mount
- · Georeferencing method: Aerial triangulation with GCP

	200	1000	1000DG
			V
	mdMapper200	mdMapper1000	mdMapper1000DG
Covered (@120m)*	30 ha. (74 ac.)	60 ha. (148 ac.)	80 ha (198 ac.)
era model**	Sony DSC-QX10	Sony a6300	Sony RX1RII
ery format	JPEG	RAW + JPEG	RAW + JPEG
0. cm/pixel (@120m)	3.2 cm	2.4 cm	1.6 cm
2	Yes	Yes	No
aps (front/side)	80% / 60%	80% / 60%	60% / 40%
od	Aerial Triangulation	Aerial Triangulation	Optimized Aerial Triangulation / GNSS-Inertial Solution
tation	Calculated during the A.T.	Calculated during the A.T.	High precision Sensor (INS)
on	GPS UAV	GPS UAV	High precision Sensor (GNSS)
racy	2.5cm (X,Y) and 5 cm (Z) with GCP	2.5cm (X,Y) and 5 cm (Z) with GCP	2.5cm (X,Y) and 5 cm (Z) without GCP
	Small area mapping	Large area mapping	 No GCP needed Efficient flight planning – cover greater areas Efficient post-processing (EO apriori and less images)
		on missions completed in Canada in 2016.	



mdMAPPER1000DG

Thanks to direct georeferencing, surveying and mapping professionals who choose mdMapper1000DG will achieve significant cost savings, the highest possible level of accuracy, and dramatic time savings – with no ground control points.

QUICK SPECS

- Payload: up to 2.7 pounds (1.2 kilograms)
- Flight time: up to 45 minutes depending on conditions
- Area covered in one battery charge: up to 198 acres (80 hectares)
- Sensor: Sony rx1rii (42.4-megapixel camera)
- GNSS/IMU: Applanix APX-15-L UAV
- Georeferencing method: Direct georeferencing technology with Nadir mount
- Enables corridor mapping



mdMAPPER3000DG

Our largest drone plus the power of direct georeferencing makes this our most advanced mapping package. The included md4-3000 UAV can fly quicker, reach higher, and carry more.

QUICK SPECS

- Payload: up to 11 pounds (5,000 grams)
- Flight time: up to 45 minutes depending on conditions
- Sensor: true medium-format camera with up to 100-megapixel performance*
- Operating height: up to 4,000 meters
- Inertial Measurement Unit (IMU): Applanix APX-15-L UAV
- Georeferencing method: Direct georeferencing technology with Nadir mount
- Enables corridor mapping

* Talk with your Microdrones salesperson about the best sensor solution for your proposed application.



Brushless gimbals and other features let you use your mdMapper to perform visual inspections and take oblique imagery.





Optional Accessory Kits

These kits provide extra functionality for mdSolutions packages. From thermal mapping, to multi-spectral imaging, to the gimbal and live video streaming necessary for inspection, these kits provide the precise capabilities you need to complete your job.

mdMapper	200	1000	1000DG
Default Camera Resolution*	18.2 MP	24MP	42.4 MP
+m (multispectral)	 Image: A second s	 Image: A second s	 Image: A second s
+t (thermal)	~	 Image: A second s	✓
+i (inspection)	-	 Image: A second s	
+LiDAR	-	v	 Image: A start of the start of
DG Option	-	 Image: A second s	-



A FLIR Vue Pro R thermal mapping sensor lets you detect heat issues from above.

* Subject to change with a camera of equal or greater capability.



ADDING OVERHEAD IS NOW AN EASY DECISION.

It's never been easier to make aerial mapping a part of your business.

Take your business to a higher level with a professional mapping solution from Microdrones. This basic package has everything you need to complete mapping projects more quickly and accurately, while gaining a competitive edge.

Compact but robust, the md4-200 aircraft at the heart of this solution is lightweight and easy to transport – yet tough enough to stand up to rough weather and daily use. mdMapper200 is a reliable, professional solution that will allow you to stay in the air longer and map up to 25 hectares (62 acres).



A minimum 18.2 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need. And because we integrate popular camera selections, when it's time to upgrade, you only have to change the camera, not the whole system!





The mdMapper200 package includes:

md4-200

md4-200 Robust, powerful, stable and dependable. Build your business on this versatile platform. Lightweight Camera & Mount A minimum 18.2 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need.

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Charger & Flight Battery One md4-200 flight battery and charger for maximum flight endurance.

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mdWaypoint A flight planning module to prepare and carry out automated flights with your aircraft.



Digital Data Link Conveniently connect your Microdrones UAV to your digital devices.



mdRC Proven, professional controls and telemetry keep you in control when you need it most.

Rugged Carrying Case

Bring your Microdrones UAV

to tackle missions in the

toughest corners of the Earth.



mdCockpit Tablet Software Simple swipes of the finger help you plan your survey area and monitor progress in flight on your Android tablet.



mdAcademy Become an expert at flying and maintaining your platform, to ensure many years of successful use.



mdMapper200: Your gateway aerial mapping solution.

Get ready to elevate your business. This competitively priced, highly capable package makes it easy to start using drones on the job – or add a smaller, more lightweight UAV to your geospatial arsenal.

The compact md4-200 UAV is easy to take on any mapping job, yet achieves long flight times and reliability in less-thanperfect weather.

- Improve your efficiency with a high-quality Germanengineered system.
- Achieve the same accuracy as traditional ground surveying in less time.
- Enjoy simplified transport of your UAV, thanks to its compact design.
- Fly 20 25 minutes, even in less-than-ideal conditions.
- Compatible with accessory kits for precision agriculture.



IT NEVER COMPLAINS ABOUT THE WEATHER

Get your business off the ground.

Expand your capabilities and flight time with mdMapper1000. Featuring our best-selling md4-1000 UAV, users enjoy the critical advantages of a larger aircraft.

The longest flying time on the market. Impressive stability for the most accurate data collection. Resistance to rough winds, harsh weather, hot temperatures, high voltage, and strong magnetic fields. With mdMapper1000, you'll rise to your clients' toughest mapping challenges every time.





A 24 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need. And because we integrate popular camera selections, when it's time to upgrade, you only have to change the camera, not the whole system!



The mdMapper1000 package includes:

md4-1000

md4-1000 Robust, powerful, stable and dependable. Build your business on this versatile platform. Sony a6300 & Nadir Mount 24 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need.

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Charger & Flight Battery One md4-1000 flight battery and charger for maximum flight endurance.

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mdWaypoint A flight planning module to prepare and carry out automated flights with your aircraft.



Digital Data Link Conveniently connect your Microdrones UAV to your digital devices.



mdLandingAssistant

Execute automatic final

approach landing. Conduct

waypoint missions and

land with minimal operator



mdRC Proven, professional controls and telemetry keep you in control when you need it most.

mdCockpit Tablet Software Simple swipes of the finger help you plan your survey area and monitor progress in flight on your Android tablet.



mdAcademy Become an expert at flying and maintaining your platform, to ensure many years of successful use.



mdMapper1000: Do more – even in intermittent conditions.

This package is all about resilience, convenience, and allaround performance. The md4-1000 UAV can stand up to intense environmental challenges, from strong winds and magnetic fields to high temperatures and voltage. It also boasts the longest flight times on the market.

- Improve your efficiency by staying in the air longer.
 mdMapper1000 delivers an average flight time of 30 – 45 minutes, depending upon conditions.
- Fly in harsh weather and stay on schedule even on days with rough wind.
- Compatible with accessory kits for precision agriculture, inspection, Lidar, and Direct Georeferencing.

Rugged Carrying

Rugged Carrying Case Bring your Microdrones UAV to tackle missions in the toughest corners of the Earth.



NO GROUND CONTROL POINTS, LESS SIDELAP, MORE PRODUCTIVITY.

Master your geospatial data by putting direct georeferencing to work for you. With mdMapper1000DG, you'll achieve the highest level of data accuracy currently possible using fewer ground control points – or no ground control points at all.

Conquer large projects in a fraction of the time. Meet the most precise data requirements and cover more ground in one flight. mdMapper1000DG will help you deliver unparalleled data quality in less time.





A 42.4 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need. And because we integrate popular camera selections, when it's time to upgrade, you only have to change the camera, not the whole system!





Imagine saving 10 hours per project.

Why does direct georeferencing matter in UAV mapping?

Calling this solution a game-changer is no exaggeration. The reduced/eliminated need to install ground control points, low sidelap, and industry-leading flight times add up to significant time (and, therefore, cost) savings.

Below is an example comparison of a surveying project completed using two different mdMapper packages: mdMapper1000, which uses aerial triangulation, and mdMapper1000DG, which uses direct georeferencing.



On the right, less flying is necessary with the Direct Georeferencing (DG) solution, which means less flight time, as well as fewer photos to process later.

As you can see in the image on the right, the direct georeferencing solution's lower front and side lap resulted in the UAV's ability to cover more ground more quickly when compared with the aerial triangulation solution on the left. The chart below shows the actual amount of time spent and number of images taken.

Workflow Task	mdMapper1000	1000DG	Difference
Plan Project	1 hr	1hr	-
GCP Layout	2 hrs	-	2 hrs
Flight	35 mins	15 mins	20 mins
Data Processing	12 hrs	4 hrs	8 hrs
Total	15.35 hrs	5.15 hrs	10.20 hrs

The results of this sample project may vary depending upon conditions.

Result: mdMapper1000DG completed its mission is less than half the time it took mdMapper1000. Direct georeferencing saved the user significant time in the field. At the same time, the reduced front and side lap also decreased the number of images taken, which drastically reduced post-processing time.



RAISE YOUR EXPECTATIONS

mdMapper1000DG as a corridor mapping tool

When a Chilean mine company invited Microdrones to perform a demonstration at one of their sites, the team was eager to show off their newly released mdMapper1000DG solution – and the cost savings, accuracy, efficiency, and safety this direct georeferencing (DG) system achieves. The client challenged the team and the system with a corridor mapping assignment, and both rose to the occasion.

MAIN POINTS

- A recent corridor mapping project in Chile.
- 5 km road.
- High altitude, 2500 meters.
- Rough winds, frigid conditions.
- Were unexpectedly asked to corridor map.

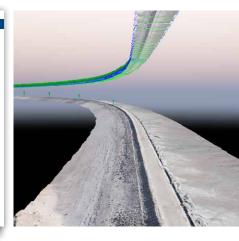
The Microdrones mdMapper1000DG performed on an unanticipated request to map an existing wall. With a non-DG solution, this project would have taken much more time and effort, and would have required GCPs. (ground control points.)

As seen in xyHt Read the full story in the xyHt "Heights" supplement from March 2017: www.microdrones.com/links/xyht-corridor-mapping

Microdrones® Succeeds at Unexpected Corridor Mapping Request









mdMapper1000DG: Collect the data and images you need, all in one site visit.

Dramatically reduce your time spent on projects with mdMapper1000DG. Direct georeferencing technology allows you to achieve the highest possible level of accuracy without using ground control points (GCPs).

- Reduce or eliminate your need to install GCPs.
- Drastically reduce time spent on post-processing and data collection, thanks to an impressively decreased side lap.
- Access hard-to-reach or dangerous sites without risking human injury.
- Improve your efficiency with industry-leading flight times and resilience to harsh environmental conditions.
- Realistically perform corridor mapping without the need for many control points.

The client had plans to heighten a 10-kilometer retaining wall so that it could contain their reservoir and reduce water waste for the mining operation. They wanted us to show that that we could efficiently map that wall with our system. We did it.





The mdMapper1000DG package includes:



md4-1000 Robust, powerful, stable and dependable. Build your business on this versatile platform. Sony rx1rii & Mount 42.4 megapixel camera paired with a custom, lightweight, vibration-free, nadir mount to capture the images you need.

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Applanix APX-15-L UAV Compact single-board

module with survey-grade

GNSS receiver and a precisely

calibrated IMU for mapping.

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Charger & Flight Battery One md4-1000 flight battery and charger for maximum flight endurance.



mdWaypoint A flight planning module to prepare and carry out automated flights with your aircraft. H

mdLandingAssistant Execute automatic final approach landing. Conduct waypoint missions and land with minimal operator intervention.



Digital Data Link Conveniently connect your Microdrones UAV to your digital devices.



POSPac UAV Direct georeferencing post processing software – used to achieve maximum accuracy and efficiency from data collected by APX-15 L-UAV.



mdRC Proven, professional controls and telemetry keep you in control when you need it most.



mdAcademy Become an expert at flying and maintaining your platform, to ensure many years of successful use.



IT DOES THE HEAVY LIFTING.

Soar above your competitors with mdMapper3000. Our most advanced mapping package available, this UAV can fly longer, reach higher, and carry more.

With a flight time up to 45 minutes, a payload up to 5 kg (11 lbs), and an operating height of up to 4,000 meters (2.5 miles), this model is for professionals and businesses that aim to push the boundaries of excellence and take industry standards to a new level.





The mdMapper3000DG package includes:

md4-3000

md4-3000 Robust, powerful, stable and dependable. Build your business on this versatile platform.

Phase One & Nadir Mount A true, medium-format camera securing 50-100 megapixels and a lightning fast capture rate so you can fly faster.

Charger & Flight Battery

One md4-3000 flight battery

and charger for maximum flight

endurance.

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Applanix APX-15-L UAV Compact single-board module with survey-grade GNSS receiver and a precisely calibrated IMU for mapping.

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mdCockpit Tablet Software Direct georeferencing post Simple swipes of the finger help processing software - used to you plan your survey area and monitor progress in flight on your achieve maximum accuracy and Android tablet. efficiency from data collected by



mdAcademy Become an expert at flying and maintaining your platform, to ensure many years of successful use.



mdMapper3000DG: Rise to any geospatial challenge.

Whether you need to carry a heavy LIDAR sensor, a professional mapping grade camera, or even multiple sensors, mdMapper3000DG can handle the job. A high payload capacity, large footprint, and the ability to operate flawlessly at even the highest altitudes make mdMapper3000DG the choice for professionals that want to go above and beyond.

- · Improve your efficiency on the job with extra long flight times up to 45 minutes.
- Carries an impressive payload up to 5 kg (11 lbs).
- Fly in the harshest conditions, thanks to Microdrones' robust German engineering.
- · Cover more ground in less time due to its large sensor footprint.



KEEP YOUR OPTIONS OPEN





See Things From a New Angle with **+i**

Turn your mdMapper1000 into a powerful aerial inspection tool with the +i add-on. This system makes it easy to collect data to create accurate threedimensional models. With +i, you can:

- Take images of structures from various angles, thanks to brushless gimbals
- View what the camera sees in realtime on a 7-inch monitor with tripod
- Frame images
- Capture outstanding imagery with a Sony Alpha a6300 with controlled zoom lens (16–50mm)

Whether you're completing infrastructure inspections, planning engineering work, or surveying construction sites, +i will add flexibility.





Detect Heat Issues Early with +t

Add value to your services offering with +t, our thermal mapping add-on. Whether you're providing a solution for farms with persistent irrigation issues or including one more preventive measure into aerial assessments, +t will help ensure thermal issues are identified weeks before they can be detected visually – and long before they cause permanent damage. Help your clients be as efficient as they can be with +t.





The +t add-on features a FLIR Vue Pro R thermal mapping sensor that allows you to:

- Identify irrigation issues before crops suffer irreparable yield loss
- Inspect and detect problems with solar panels
- Identify building heat loss via the roof, etc.



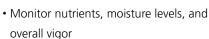
mdMapper solutions are smart and versatile, just like the people who use them. As such, you often need to complement your core business tasks with special projects. As part of the mdSOLUTIONS lineup, Microdrones offers these key optional accessory kits to add functionality, speed, modularity and flexibility.



Shed New Light on Crop Health with **+m**

Agronomists, researchers, and other precision agriculture professionals can gain valuable insight into the vitality of crops with +m. Featuring the acclaimed Micasense Rededge sensor, the multispectral power of the +m add-on allows you to:





- Identify and measure crop issues like disease, pest problems, weeds, and water-stress
- Estimate yields
- Characterize soil and vegetative cover
- Use data for predictive analysis

As your UAV flies over a field, +m captures five spectral bands and data is processed into indices tailored for specific agricultural applications.



Coming soon: See Things Froma New Angle with +LiDAR

+LiDAR is a fully integrated LiDAR accessory kit, that transforms your md4-1000 into a highly efficient system for building point cloud models. Featuring a downward facing LiDAR with 110 degrees of scanning, +LiDAR is optimized for aerial surveying, research, construction and mining tasks. By narrowing the field of vision to a downward facing orientation, +LiDAR collects only the data you need from an aerial position, giving you faster





processing time and less waste. Benefits of +LiDAR:

- Low weight (less than 1.3 kg / 2.7 lb, including APX, camera and scanner) preserves energy for flight.
- · Low cost relative to other solutions
- Very good point density
- Absolute accuracy ±5 cm / ±2 in





























INDUSTRY-LEADING COMMERCIAL UAVS

An idea born in a small town in Germany. Used everywhere on earth.

For more than a decade, Microdrones® has been building and perfecting unmanned aerial vehicles. We developed the world's first commercial quadcopter and our innovation continues to drive the industry.

Our team has created the highest-quality aircraft and integrated the most advanced sensors, accessories, and kits. More important, our solutions are being used to revolutionize the way work is performed.

Microdrones customers use our aircraft for all sorts of applications. Some start with just the aircraft and then we help them customize it to perfectly suit the industrial or research solution they are creating.

Others purchase our aircraft as part of a complete package that includes everything they need to perform applications like land surveying and mapping, corridor mapping, construction, academic research, infrastructure inspection, mining, volumetrics, precision agriculture, surveillance, and so much more.



RAIN AND HEAT RESISTANT

The Microdrones molding process keeps electronics and wiring protected from the elements. Our system is resistant to rain, sand and salt, so you can fly in harsh conditions.

MORE THAN 1000 BUSINESSES AND PROFESSIONAL USERS WORLDWIDE TRUST MICRODRONES®

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ROBUST HOUSING AND COMPONENTS

Robust carbon fiber construction makes easy work of an occasional rough landing. Carbon fiber also insulates interior components so you can fly at more extreme temperature and humidity levels.

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mdOS FOR EFFICIENT CODE CUSTOMIZATION

Microdrones created a lean, proprietary operating system and used that as the foundation for a flexible autopilot, so you can customize it to meet the specific needs of your mapping project.

Businesses and institutions all over the globe rely on Microdrones aircraft to cut operating costs and make their work more efficient, safe, and accurate. Here are just a few reasons commercial users trust Microdrones aircraft:

- German engineering Microdrones UAVs are rugged, reliable, and built to withstand rough weather and the rigors of daily use.
- Industry-leading flight times Microdrones UAVs deliver the longest flight times on the market, so you can fly longer and improve your efficiency on the job.
- Proven performance Professionals need to fly with confidence. Our brushless, low-RPM motors work smart, not hard, allowing for exceptional longevity.

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GNSS RECEIVER

A GNSS chip combines the power of all existing satellitebased positioning systems around the globe (GPS, GLONASS, Galileo, and Beidou), dramatically improving accuracy. This provides superior positioning and increased efficiency, while reducing risks of breakdown and missed data.

A PLUS FOR EFFICIENCY

Our plus sign (+) shaped configuration is more practical. With a motor on the front, the rear and each side, the airframe remains more stable in level flight and during turns. With less energy being consumed for stability, the extra power goes to carrying heavier payloads.

FAILSAFE MOTORS FOR MINIMUM DOWNTIME

Brushless, low RPM motors and large props work seamlessly for the life of your airframe. Our motors don't need to work as hard, which translates to longevity.

READY FOR THE FUTURE

microdrones

The Microdrones platform is ready to be upgraded when new developments in hardware and firmware are implemented.

- Simplicity It is easy to get started with Microdrones UAVs. They are easy to use and can be operated with very little training.
- Application-specific options We work to understand your needs and we've developed an arsenal of solutions to meet them. Direct georeferencing, multi-spectral imaging, inspection accessories with brushless gimbals and video return, LiDAR, high-speed industrial cameras – our customers enjoy the best solutions for their specific applications.

attitude. For mapping, stable flight delivers more accurate and precise data.

Our smart auto pilot system instantly responds to changing winds to maintain the proper flight

STABLE FLIGHT FOR

PRECISE RESULTS

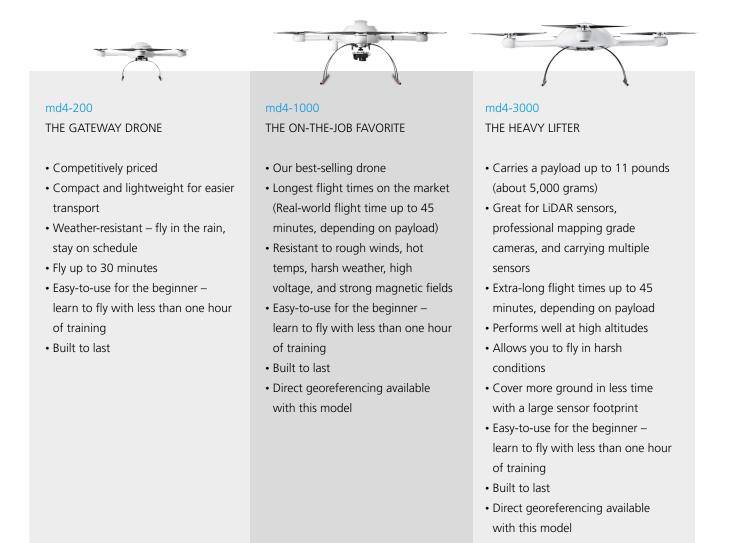
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• We offer direct georeferencing (DG) solutions. Far superior to RTK or PPK, this technology provides significant cost savings to users and enables access when images must be georeferenced in challenging locations. DG enables corridor mapping.



CARRY YOUR IDEAS TO FRUITION.

The chart below will help you decide what platform might best fit your needs, application or task. These drones can be purchased alone or as part of complete solutions tailored for specific applications.





Want to talk with a UAV Expert?

We're eager to help you determine whether or not our unmanned aerial solutions are right for your business. Email us today and we'll get in touch with you: info@microdrones.com



We're focused on your success.



www.microdrones.com