




## Reliable Data Storage for Demanding Search & Rescue Drone Operations





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## Search & Rescue

El Dorado County Search and Rescue team (EDSAR) is implementing drone technology to assist in efforts to reduce search times, adequately resource recovery operations and improve aid rendered to victims.

EDSAR is a volunteer group of over 100 people organized by the El Dorado County Sheriff's Office. Volunteers professionally train on specialized skills to provide a wide range of rescue services to the residents and visitors of El Dorado County, California.

When a search is required these specialized teams are called out depending on the situation. Volunteers are called out at in all types of conditions conducting operations day or night, in rain or snow, and during extreme hot or cold weather.

The Mountain Rescue/Technical Ropes team is a highly specialized team within EDSAR focused on evacuating victims from a mountain face where a steep hill slope requires the deployment of ropes, sleds, anchors and staging equipment to get rescuers and gear safely over the edge of a mountain or cliff to the victim, render aid to the victim and then get the victim to a place where they can be transported to safety. Rescues may be done in dry, wet and snowy conditions.

## Data Storage in Drone Operations

El Dorado Search and Rescue has recently started training with a drone and mounted 4K camera powered by a 128GB<sup>1</sup> Western Digital Industrial IX QD342 microSD™ card.

**Western Digital.**  
**Industrial XI QD342**

**microSD I 128GB**  
**U V30**

Using an industrial grade microSD card in these operations helps the drone operate reliably in temperature extremes, high humidity, with vibration and other demanding environments.

High performance and high capacity storage are required to support 4K video generated by the drone. A 4K video @100mpbs over 30 minutes of operation can generate up to 22GB of data. 4K video captures clear images of the situation they are responding to, and for review of the video after operations.



*Images are taken from an El Dorado County Search & Rescue team training exercise*

## Drone Operation in Mountain Rescues

Due to the slope of the hill or mountain, it is often impossible to assess in advance the terrain to be traversed or the state of the victim. Team members will go over the edge of the mountain and make adjustment to their plan as the rescue mission unfolds.



Using a drone, a team member can fly the drone over the edge of the mountain to identify the location of the victim, the possible status of the victim and map the safest path to send rescuers to the victim. Video from the drone dramatically reduces the time required to reach, render aid to and rescue a victim. The faster a victim can be transported to safety the more likely it is to save a life.

In some mountain rescues a helicopter is deployed to lift the victim from their location. With a drone and camera, the team could assess whether the victim will need a helicopter for rescue and what is the best equipment the helicopter would need for the rescue. This would save valuable time in the rescue as the helicopter resource could be staged and ready to go even before the rescue team reaches the victim.

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*"Reducing the time to render aid to a victim is critical," said Jason Calvert, Technical Ropes Team Lead, "The faster we can locate and transport a person to medical care, the greater their odds are of a speedy recovery. Drone reconnaissance will allow us to identify the exact location of the victim and help identify the state of the victim, which then enables us to properly stage the right people and equipment for the rescue operation. Especially during difficult weather conditions, the ability to reach the most vulnerable victims quickly will make a huge difference in their rescue and care."*

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## Summary

El Dorado County Search and Rescue teams are implementing drone technology to assist their efforts to reduce search times, adequately resource recovery operations and improve the aid rendered to victims. Rescue operations in extreme weather and difficult terrain require devices that can operate in those conditions. Western Digital's Industrial grade microSD cards are designed and tested to withstand the most demanding conditions, delivering high reliability and durability required for these drone operations, enabling search and rescue teams to fulfill their mission of helping others.







#### Western Digital Industrial microSD™ Card Products<sup>4</sup>

Product Name	Industrial Wide Temp IX QD342	Industrial Ext Temp IX QD332	Industrial Wide Temp IX QD332	Industrial Ext Temp IX QD334
Interface	SD6.0 UHS-I 104	SD5.1 UHS-I 104	SD5.1 UHS-I 104	SD5.1 UHS-I 104
Capacity <sup>1</sup>	16GB to 256GB	8GB to 128GB	8GB to 128GB	8GB to 64GB
Operating Temp	-25°C to 85°C	-40°C to 85°C	-25°C to 85°C	-40°C to 85°C
NAND Flash Technology	3D TLC	MLC	MLC	SLC
Performance <sup>2</sup>	Speed Class 10, U1/U3, V10/V30	Speed Class 10, U1	Speed Class 10, U1	Speed Class 10, U3
Sequential R/W <sup>2</sup>	Up to 100/50 MB/s	Up to 80/50 MB/s	Up to 80/50 MB/s	Up to 90/50 MB/s
Endurance <sup>3</sup>	Up to 768 TBW	Up to 384 TBW	Up to 384 TBW	Up to 1920 TBW

#### Western Digital Industrial microSD™ Card Products<sup>4</sup>

Product Name	Industrial Wide Temp IX QD342	Industrial Ext Temp IX QD332	Industrial Wide Temp IX QD332	Industrial Ext Temp IX QD334
Capacity				
8GB	—	SDSDQAF3-008G-XI	SDSDQAF3-008G-I	SDSDQED-008G-XI
16GB	SDSDQAF4-016G-I	SDSDQAF3-016G-XI	SDSDQAF3-016G-I	SDSDQED-016G-XI
32GB	SDSDQAF4-032G-I	SDSDQAF3-032G-XI	SDSDQAF3-032G-I	SDSDQED-032G-XI
64GB	SDSDQAF4-064G-I	SDSDQAF3-064G-XI	SDSDQAF3-064G-I	SDSDQED-064G-XI
128GB	SDSDQAF4-128G-I	SDSDQAF3-128G-XI	SDSDQAF3-128G-I	—
256GB	SDSDQAF4-256G-I	—	—	—

<sup>1</sup> 1GB= 1,000,000,000 bytes. Actual user storage less.

<sup>2</sup> Based on internal testing; performance may be lower depending on host device, usage and other factors. 1MB = 1,000,000 bytes

<sup>3</sup> Approximation based on Western Digital internal metrics that quantifies how much data can be written to a card in its lifespan expressed in Terabytes Written (TBW), with write application of 1.

<sup>4</sup> Product specifications subject to change without notice. Pictures shown may vary from actual products. Not all products are available in all regions of the world.

# Western Digital.

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