Standard Instrument Specifications

Performance

Maximum range	To 20% target	350 m
	To white wall	650 m
Wireless operation	IEEE 802.11 B/G	
Range resolution	1 cm	
Angular resolution	0.1°	
Range accuracy	±2 cm within limited operating temperature	
Spot size	4 cm + (0.005 x distance) (cm)	
Maximum readings	100,000 per survey	

Output

Output format	DXF, ASCII, XYZ
Data transfer	Serial, RS-232C USB, IR via Microsoft Active Sync

Power

Internal battery	24 VDC battery 24 VDC battery charger for 110/220 VAC

Environmental

Operating temperature	-10°C to +50°C
Visible laser pointer	0°C to +40°C
Storage temperature	-40°C to +50°C

Physical Size

Scanning head		53(L) × 16.8(W) × 15.2(H) cm
	Weight	7 kg
Power module		27(L) ×24.7(W) ×17.5(H) cm
	Weight	8.3 kg
Support system	Boom	229(L) ×23(W) × 25(H) cm
	Mast	193(L) ×20(W) × 25(H) cm
	Weight	44.5 kg

Eyesafety

Infrared rangefinder laser	FDA Class I; 21 CFR 1040
Visible laser pointer	FDA Class II; 21 CFR 1040

Standard Accessories

Handheld computer
15 m power cable
USB/serial download cable
24 VDC battery and charger

Optional Accessories

QVOL volume calculator software
Vertical insertion package
Tripod mounting bracket

Approvals Pending

CE

Optech

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Optech

CAVITY MONITORING SYSTEM

REVOLUTIONIZING 3D SURVEYING IN SUBTERRANEAN CAVITIES

CMS

CAVITY MONITORING SYSTEM

Optech's Cavity Monitoring System (CMS) revolutionizes the surveying of subterranean cavities. Custom designed for subterranean scanning, the CMS delivers a fast, accurate 3D surveying solution in a configuration that meets the challenges of working underground - a compact unit, wireless operation, sealed optics and specialized accessories.

The CMS collects thousands of accurately located measurements per minute. These measurements can be used to determine stope volume, stope dilution, and sloughing/backfill volumes, and to create detailed drawings. Universally adopted data formats ensure that CMS data can be used in any software workflow.

Optech's CMS developed in partnership with world-leading mining organizations, pioneered laser-based autoscanning for mining in the 1980s. With over 100 systems deployed globally, the CMS continues to provide fast, reliable and efficient scanning of underground cavities.

Optech is the global market leader in advanced laser-based survey instruments, with clients around the globe. Optech products, based on the company's 30 years of expertise in pulsed laser radar (lidar), offer client-driven solutions in topographic mapping, hydrographic applications, laser imaging, space-based atmospheric monitors and landing/docking systems, and industrial/mining rangefinders.

Cavity Surveys - Accurate, Efficient and Safe

With a sensor weighing only 7 kg and a robust, wireless data collection system, the CMS provides routine, unobtrusive surveying of underground cavities – performed safely by a single operator. With scanning ranges of up to 650 m and accessories for remote placement of the sensor, areas can now be surveyed without human entry to the site.

Image courtesy of the David Bell Mine

Minimal hanging wall dilution

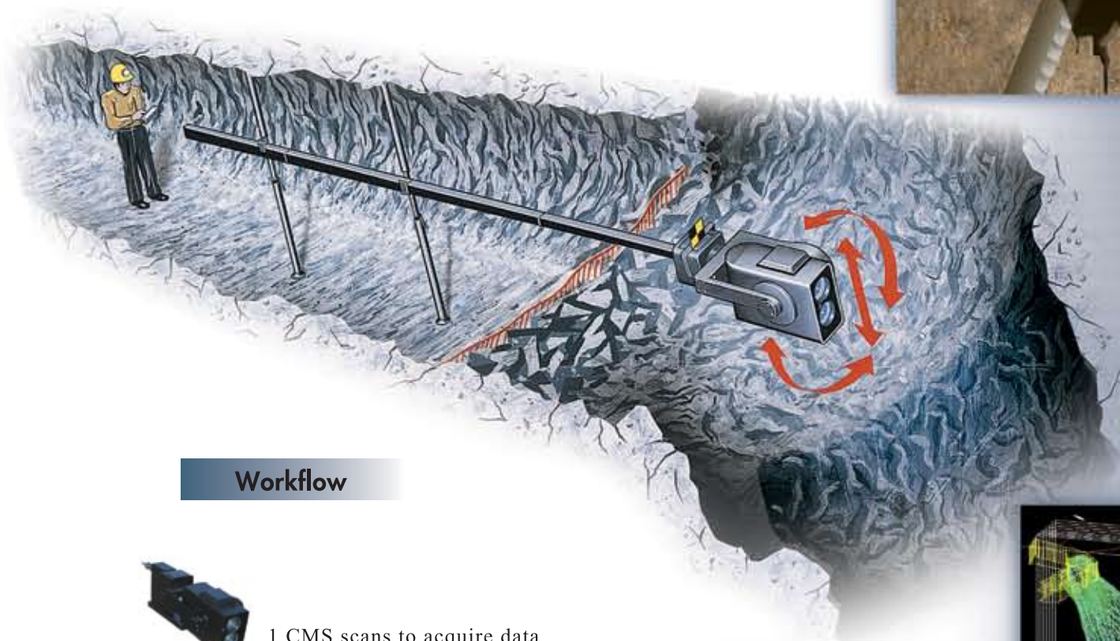
Hanging wall failure

Ore outline
Drift
Level 1 stope/cavity
Level 2 stope/cavity
Level 3 stope/cavity
Slot

Mining method modified to minimize dilution of lower stope

Versatile and Functional

CMS accessories enable the sensor to be supported and extended into cavities horizontally up to 7 m, and vertically down to 50 m. Throughout the scan, the sensor is controlled wirelessly from a safe zone outside the cavity. During collection the data can be viewed on the rugged handheld controller that operates the sensor. Afterwards, a comprehensive georeferencing system ensures that CMS data can be easily converted to the local mine coordinate system for use with other types of data.



Above:
CMS extended into a cavity on the boom and operated remotely.

Left (inset):
CMS in operation in mine.

Below:
Fast volume calculations and CAD drawings.

Workflow

1 CMS scans to acquire data

2 Data is received by the power module

3 Wireless data downloads to the handheld computer

4 Data downloads to a PC

DATA FILE FORMAT
- DXF
- ASCII
- XYZ

5 Data output