

Quarryman® Pro





Quarryman® Pro

Reflectorless Rock Profiling & 3D Laser Scanning System

3D Laser Scanning System

Technical Specifications

	Quarryman® Pro	Quarryman® Pro LR
Laser Classification	Class 2M FDA/ IEC/ EN 60825-1 (2001/7) 	Class 3R FDA/ IEC/ EN 60825-1 (2001/7) 
Reflectorless range	600 m / 2300' to 1 m² white card: 90% reflectivity	1200 m / 3800' to 1 m² white card: 90% reflectivity
Angular encoder accuracy	0.02°	0.02°
Angular encoder resolution	0.01°	0.01°
Accuracy	5 cm (1.97 in)	5 cm (1.97 in)
Resolution	1 cm (0.4 in)	1 cm (0.4 in)
Spot size @ 100 m	27 x 4.6 cm	27 x 4.6 cm
Automated scan rate	250 points per second	250 points per second

Environmental

Water and dust resistant	IP66	IP66
Operating temperature	-10 °C to 45 °C / 14 °F to 113 °F	-10 °C to 45 °C / 14 °F to 113 °F

Power & Dimensions

Power	DC 12 V (10.5 V DC to 17 V DC)	DC 12 V (10.5 V DC to 17 V DC)
Weight	8.1 kg (17.9 lbs)	8.1 kg (17.9 lbs)
Dimensions (W x D x L)	410 x 239 x 177 mm (6.1 x 9.4 x 7.0 in)	410 x 239 x 177 mm (6.1 x 9.4 x 7.0 in)

Quarryman® Pro Applications

- 3D rock face profiling
- 3D mine mapping
- Volumetric surveys
- Drilling and blasting burden determination
- Blast evaluation
- Earth moving and land reclamation surveys
- Tunnel profiling

Quarryman® Pro Benefits

- Safe, long range reflectorless surveying of hazardous areas
- Highly portable and one man operation
- Rugged reliability in all environments
- Minimal operator training
- Low cost of ownership
- International service centres

For more information on Quarryman®

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Quarryman® Pro

Quarryman® Pro is the latest version of MDL's aggregate and mining industry laser profiling system currently in use by most major surface mining and quarry service companies worldwide.

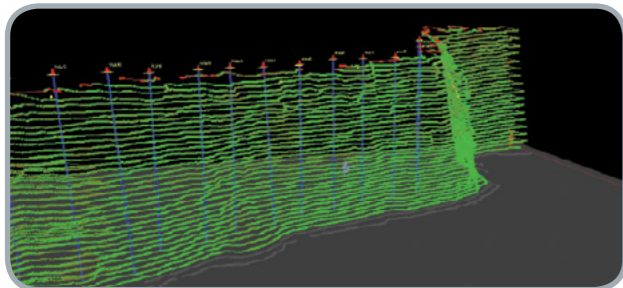
Applications include 3D mapping of entire quarry or mine sites, determination of 3D rock face geometry, blast design and volumetric surveying of stockpiles and reserves.

Twenty five years of continuous Quarryman® Pro development and production at MDL have resulted in a product specifically designed for the toughest jobs and the harshest environments.

The Quarryman® Pro is powerful, robust, reliable, easy to operate and very portable. The Quarryman® Pro LR has an increased range of up to 1200 metres to non-compliant surfaces and also has a vertical spot size approximately ten times smaller than its predecessor. The increase in range and dramatically smaller spot size will allow the operator to collect more detail at longer ranges, thus minimising equipment set-ups and time on site.

Both Quarryman® Pro systems retain the basic manual point and shoot mode, the advanced automatic laser scanning mode (250 points per second) and come as standard with a red dot pointer to help target at short ranges in low light conditions.

The Quarryman® Pro measures and records millions of data points directly to a compact flash card and does not require external PDAs or computers in the field. The collected data can then be processed by MDL's Model software, or any of the other optional software packages to create detailed 3D models. These models can then be exported to most CAD software packages for further analysis.



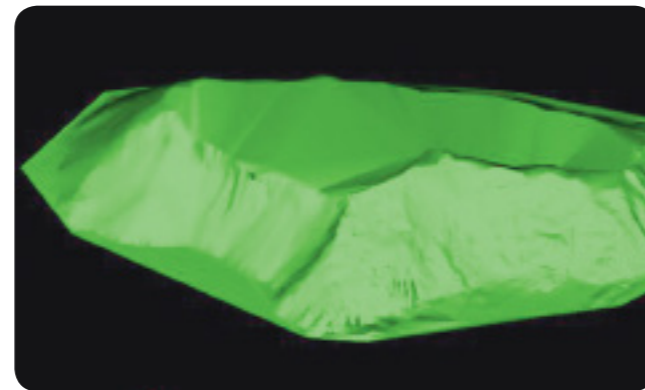
Burden model of rock-face

Model Software

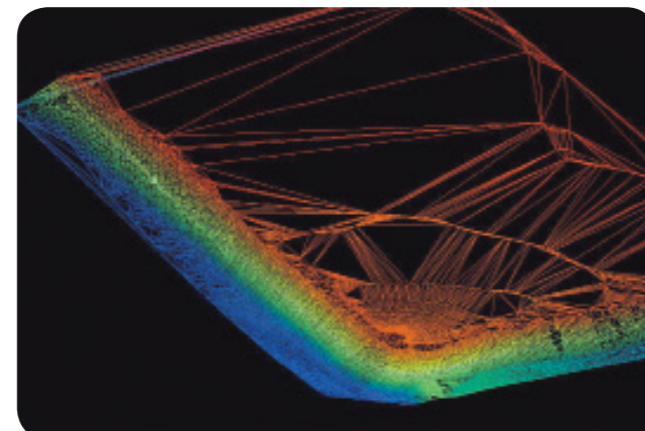
The Quarryman® Pro system comes with MDL's Model software. This software allows the user to perform basic survey operations and generate, edit and export georeferenced X,Y,Z point cloud data to third party software. Everything from general area scanning to high resolution imaging of structures can be handled with MDL's Model software.

Volume 6 Software

MDL's optional Volume 6 software will allow users to collect multiple stockpiles in the field and produce highly accurate 3D stockpile models, volumes and reports. This software will allow users to utilise the current advanced features the Quarryman® Pro has to offer.



Model of a multiple station setup of a typical stockpile



Triangulation of scan data collected from waste stockpile

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Quarryman® for Face Profiling

The Quarryman® Pro is at the heart of MDL's face profiling package which has been helping maximise blast optimisation around the world for over 25 years.

Quarryman® Pro's FastScan function takes just a few minutes to produce a detailed scan of the rock face to be blasted. The instrument's ability to operate in point and shoot mode also allows individual shots to be taken to survey the proposed or actual position of the blast hole collars. Traverses and resection can also be carried out if multiple instrument setups or accurate geo-referencing of the scans are required.

Benefits of Profiling

The Quarryman® Pro has been a key component of many companies' efforts to optimise blasting procedures. The profiling package has been proven to contribute to:

- Increased safety through eradication of fly rock incidents
- Reduction in costs associated with poor quality fragmentation e.g. - increased secondary breakage, wear on equipment & vehicle tyres, excessive use of explosives and increased fines
- Improved environmental impact due to reduced air blast, noise and vibrations, as well reduced on-site energy usage.



Face 3D Pro: MDL's Blast Design Software

Data from the Quarryman® Pro can also be downloaded into MDL's optional Face 3D Pro software. This blast design software gives Quarryman® Pro users the chance to take advantage of the dense data point clouds generated from the scan. The software will allow users to design borehole layouts to produce the most safe and efficient blast possible. Face 3D Pro will analyse the point clouds and calculate the burdens as well as identify weak burden interactions between boreholes. Drillers' reports can also be created to guide the drills to the correct position and display the characteristics of each hole that is to be drilled.

Boretrak® Borehole Systems

MDL pioneered the development of integrated rock face profiling and borehole geometry determination when we introduced the Boretrak®, MDL's industry leading borehole surveying system in 1987. The Cabled and Rodded Boretraks complete MDL's profiling package.

Borehole deviation measurement from the Boretrak® units can be downloaded to Face 3D Pro, along with data from the Quarryman® Pro to calculate true, as-built burdens and assist quarry staff to audit drilling operations.