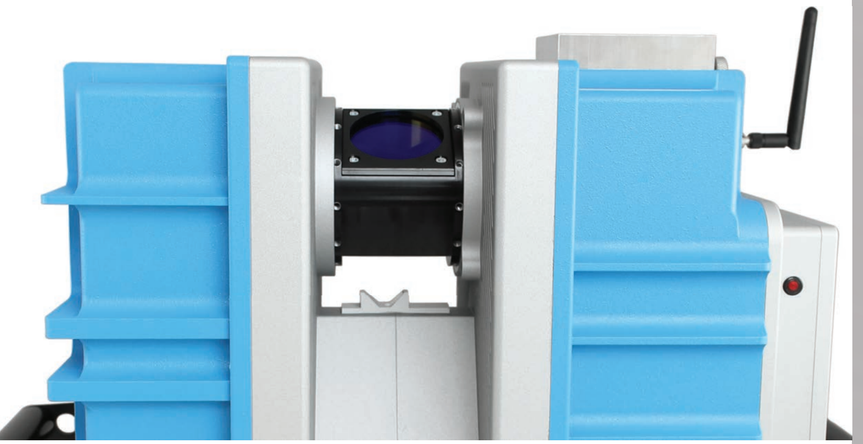


Z+F IMAGER® 5006EX

Explosion-proof 3D laser scanner

Based on the high quality laser scanner Z+F IMAGER® 5006, Zoller + Fröhlich GmbH and DMT GmbH & Co. KG have developed an explosion proof 3D laser scanner. The Z+F IMAGER® 5006EX pioneers surveying in underground mining and industries where explosive atmospheres occur. The Z+F IMAGER® 5006EX is the world's first ATEX approved 3D laser scanner for use in mining and industrial applications under explosive conditions.

The Z+F IMAGER® 5006EX is class I and class II approved according to ATEX directive 94/9/EG.
The ATEX directive 94/9/EG „Equipment and protective systems intended for use in potentially explosive atmospheres" is a European standard. The ATEX approval for this equipment is widely accepted outside the European community as well.

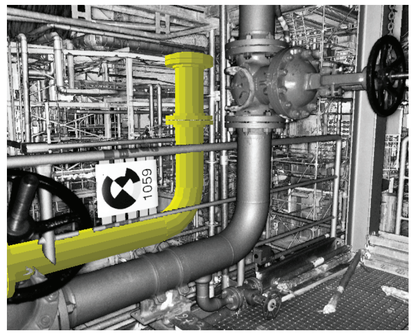
Range 79 m (approx. 259 ft.)
The laser scanner has a nominal range of 79 m. This range allows it to use the scanner in the most potentially explosive atmospheres applications.

508,000 million pixels / sec
With a maximum measurement rate of 508,000 pixels/sec, the Z+F IMAGER® 5006EX is the fastest explosion proof 3D laser scanner in the market.

Field-of-view 310 ° x 360 °
The expanded field-of-view makes it possible to scan a large area and allows to complete the documentation with a small number of scanning positions.

100% Stand-Alone
The stand-alone concept guarantees more flexibility. No external equipment is required to scan in the field. Because of that, additional ignition sources in explosive atmospheres are excluded.

High Data Quality
The Z+F IMAGER® 5006EX has a high angle and distance measuring accuracy, like all 3D laser scanners of the Z+F IMAGER® series. The very low measurement noise guarantees, high data quality on different surfaces and large measuring distance. Even with the fastest data acquisition, the scanner scans very accurate in the millimeter range.



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Grafinta
Avda. Filipinas, 46
28003 Madrid
Tfo. 91 5537207
Fax 91 5336282
E-mail grafinta@grafinta.com

Head office – Germany

Zoller + Fröhlich GmbH
Simoniusstrasse 22
88239 Wangen im Allgäu
Germany

Phone: +49 7522 9308-0
Fax: +49 7522 9308-252

www.zf-laser.com | info@zf-laser.com

Subsidiary – UK

ZF UK Laser Limited
9 Avocado Court
Commerce Way
Trafford Park
Manchester M17 1HW
United Kingdom

Phone: +44 161 8717 050
Fax: +44 161 3125 063

www.zf-uk.com | info@zf-uk.com

Subsidiary – USA

Z+F USA, Inc.
700 Old Pond Road
Suite 606
Bridgeville, PA 15017
USA

Phone: +1 412 257 8575
Fax: +1 412 257 8576

www.zf-usa.com | info@zf-usa.com

Subsidiary – Italy

Z+F Italy, Srl
Viale Europa 70
20090 Cusago (MI)
Italy

Phone/Fax: +39 029 039 4116

www.zf-italy.com | info@zf-italy.com

Grafinta
Avda. Filipinas, 46
28003 Madrid
Tfo. 91 5537207
Fax 91 5336282
E-mail grafinta@grafinta.com

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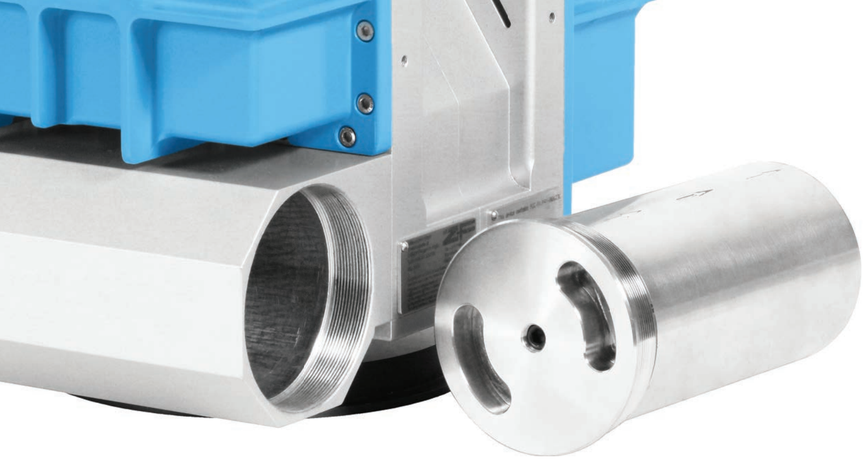
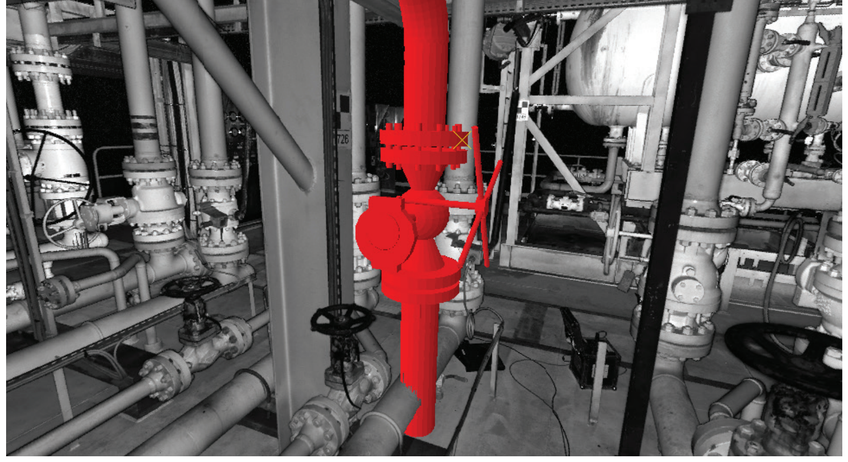
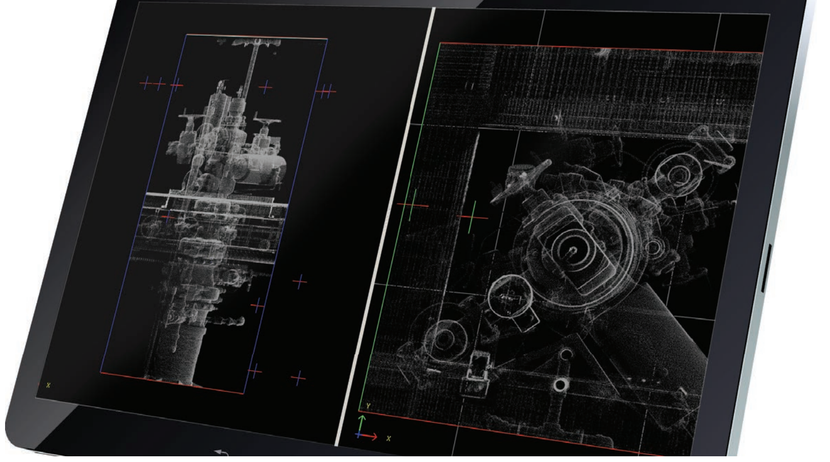


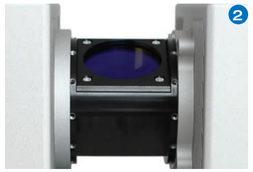




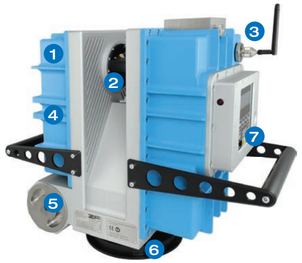
Unique Features

Housing 1
The ATEX-certification allows to use the Z+F IMAGER® 5006EX with explosion-proof housing in mining (category M2), and in industrial areas with potentially explosive atmospheres (category 2G).

Rotating mirror 2
The laser beam is deflected by a rotating mirror, which reaches a rotational frequency of up to 50 rps. The mirror is capped with a patented protective glass. This guarantees high quality, ruggedness and persistence. With a maximum rotation speed of 3,000 rpm and a maximum scan rate of more than 500,000 pixels/sec, it is possible to generate high resolution scans in short time.



Wi-Fi 3
The Wi-Fi interface allows the scanner to be controlled and operated via a web browser or by the Z+F Scan App.



Hard drive 4
The scan data are stored on the internal 60GB hard drive.

Power source 5
The internal battery can be changed without risk, even in potentially explosive areas.

Ports 6
The fixed base of the scanner is equipped with two ports for the power supply and the data download.

Control panel 7
The Z+F IMAGER® 5006EX has an integrated display and control panel. It's also possible to control the scanner via a wireless connection. That allows controlling the scanner from a longer distance provided the PDA or the notebooks also have an ATEX certification. The ethernet interface can be used outside of explosive environments.

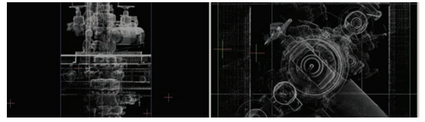
Applications

As-built documentation
3D coordinates are available in millimeter precision for future constructions and revamps, which can be used to easily derive 2D construction plans.

Deviation analysis
The 3D raw data (point clouds) can be directly compared to existing CAD models and can thus immediately detect any structural variations.

Deformation analysis
Scan data can be used to create a very detailed deformation analysis to monitor certain areas of interest over time. It is also a popular and reliable documentation tool for the preservation of evidents, e.g. accidents.

Safety and hazard analysis
Threatening dangers can be detected in time. Therefore effective protection measures can be introduced.



Certification Classes

Class I
(equipment marking: Ⓔx I M2 Ex d [ib] op is I Mb)

Definition

1. **Equipemt group I** (mining) **category M2** (must be deenergized in the event of an explosive atmosphere)
2. **d** (flameproof enclosure)
3. **ib** (**i** = intrinsic safety; **ib** = application in zone 1,2)
4. **op is** (optical radiation; **op** = intrinsically optical radiation)
5. **I** (methane)
6. **Mb** (high level of hazard)

Class II
(equipment marking: Ⓔx II 2G Ex d [ib] op is IIB T4 Gb)

In this class, all areas with potentially explosive atmospheres are present.

Definition

1. **Equipment group II** (other explosive atmospheres) **category 2G** (atmosphere G (gas) - zone 1)
2. **d** (flameproof enclosure)
3. **ib** (**i** = intrinsic safety; **ib** = application in zone 1,2)
4. **op is** (intriscally optical radiation)
5. **IIB** (ethylene)
6. **T4** (maximum permissible surface temperature: 135°C)
7. **Gb** (zone 1 ATEX, category 2G)

The Z+F IMAGER® 5006EX is approved for class II, which allows a diverse range of industrial applications. However it is important to verify the industrial environment for the appropriateness of the Z+F IMAGER® 5006EX prior to use.

The Z+F IMAGER® 5006EX, with its pressure-resistant case, is tested for usage in category 2G. It can be used in areas (zone I and II) where explosive atmospheres, caused by gases, vapours or mists, are likely to occur.

The Z+F IMAGER® 5006EX is also approved for gas group IIB. In this gas group the reference gases are ethylene, city gas and other industrial gases.

Another important specification is the temperature classification which specifies the maximum equipment surface temperature. The Z+F IMAGER® 5006EX is approved for temperature class T4, where the surface temperature is allowed to reach 135°C. This is an important consideration for plant operators. The calibrated scanner can operate in temperatures of 0°C to 40°C.

DEKRA

EC-Type Examination Certificate

(1)
(2) - Directive 94/9/EC -
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) BVS 09 ATEX E 078

(4) Equipment: Laser scanner type Imager 5006EX and Power Supply type 5006EX

ATEX certificate