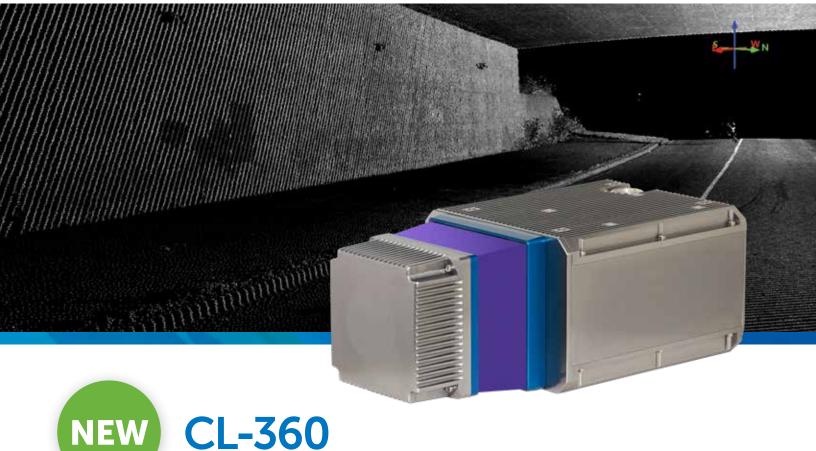


Part of the Teledyne Imaging Group



360 Degree Laser Scanner

The Optech CL-360 is a survey grade 360 degree laser scanner enabling OEM hardware manufacturers and integrators to develop the next generation of best-in-class UAV, mobile, and terrestrial scanning solutions for surveying in mapping, engineering, transportation and utility applications.

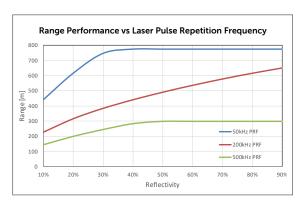
The CL-360 supports a wide range of operating parameters including pulse repetition rate, range, and lines per second to allow it to be optimized for almost any application and data requirements.

## CL-360 Laser Scanner Technical Specifications



Laser  Range measurement principle Range Performance¹ Pulse Repetition Frequency Beam Divergence (1/e²)  Wavelength Laser safety classification Intensity recording Maximum number of returns Minimum range Range accuracy 1 sigma² Precision single shot²  Scanning Characteristics Field of View Lines per second [Scan Frequency]  Storage Temperature (min / max) Storage Temperature (min / max)  Shock Dimensions  Weight Do-160H Section 7, Category A, Standard Shock Dimensions Do-160H Section 7, Category A, Standard Shock Dimensions Do-Wer Power Power Power Supply Input Voltage Post-Processing Software Realtime API Library Windows, Linux Windows, Linux Procoson 50, 200, 500 KHz) to 300 m (500 kHz) T75 m (500 kHz) to 500 kHz) to 500 kHz) to 500 kHz) T75 m (500 kHz) to 500 kHz) (500 kHz) T550 nm Class 1 T550 nm Class 1 T550 nm  4 (First, Second, Second Last, Last) T61 mm T61 mm T75 m (500 kHz) T61 mm T62 Nm T63 Nm T64 (First, Second, Second Last, Last) T64 (Pour Storage Temperature (min / max) T10 mm T10 mm T10 mm T10 mm T10 Nm T10 N	ITEM	SPECIFICATION
Range measurement principle Range Performance¹ Range Performance¹ Rouge Performance¹ Pulse Repetition Frequency Soo, 200, 50 kHz (Programmable) Beam Divergence (1/e²) 0.3 mrad Wavelength 1550 nm Laser safety classification Class 1 Range resolution 2 mm Intensity recording 12 bits Maximum number of returns 4 (First, Second, Second Last, Last) Minimum range 1.5 m Range accuracy 1 sigma² 10 mm Precision single shot² 5 mm  Scanning Characteristics Field of View 160° Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental Operating Temperature (min / max) Procision Storage Temperature (min / max) Procision Shock Dimensions 310 mm L x 160 mm W x 116 mm H Weight Protection Class Power Power Supply Input Voltage Power Consumption Connector 2 Data Storage Power, RS232, PPS Connector 2 Data Storage Post-Processing Software Windows Windows		SPECIFICATION
Range Performance¹ 775 m (50 kHz) to 300 m (500 kHz) Pulse Repetition Frequency 500, 200, 50 kHz (Programmable) Beam Divergence (1/e²) 0.3 mrad Wavelength 1550 nm Laser safety classification Class 1 Range resolution 2 mm Intensity recording 12 bits Maximum number of returns 4 (First, Second, Second Last, Last) Minimum range 1.5 m Range accuracy 1 sigma² 10 mm Precision single shot² 5 mm  Scanning Characteristics Field of View 360° Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental Operating Temperature (min / max) -10°/+40° C Storage Temperature (min / max) -20°/+50° C Vibration DO-160H Section 8, Category S, Curve M Shock DO-160H Section 7, Category A, Standard Shock Dimensions 310 mm L x 160 mm W x 116 mm H Weight 3.5 kg Protection Class Protection Class Protection 60W  Interfaces Connector 1 Power, RS232, PPS Connector 2 1000 Mbit/sec Ethernet Data Storage Post-Processing Software Windows		
Pulse Repetition Frequency  Beam Divergence (1/e²)  0.3 mrad  Wavelength  1550 nm  Laser safety classification  Range resolution  Intensity recording  Maximum number of returns  Minimum range  1.5 m  Range accuracy 1 sigma²  10 mm  Precision single shot²  5 mm  Scanning Characteristics  Field of View  360°  Lines per second [Scan Frequency]  50 – 250 lines/sec  Environmental  Operating Temperature (min / max)  Choraction  Shock  DO-160H Section 8, Category S, Curve M  Weight  3.5 kg  Protection Class  Interfaces  Connector 1  Power, R\$232, PPS  Connector 2  Data Storage  Power, Processing Software  Windows  Windows  Possible (1/e²)  0.3 mrad  0.3 mrad  0.3 mrad  0.3 mrad  0.3 mrad  0.4 mrad  Class 1  Range accuracy 1 sigma²  10 mm  2 mm  4 (First, Second, Second Last, Last)  10 mm  Precision Second Last, Last)  10 mm  4 (First, Second, Second Last, Last)  10 mm  4 (First, Second, Second Last, Last)  10 mm  4 (First, Second, Second Last, Last)  10 mm  5 mm  4 (First, Second, Second Last, Last)  10 mm  5 mm  5 mm  Socanning Characteristics  Field of View  360°  50 – 250 lines/sec  D-250 lines/sec  D-250 lines/sec  D-250 lines/sec  D-250 lines/sec  D-250 lines/sec  D-250 lines/sec  D-260H Section 8, Category 8, Curve M  Storage Temperature (min / max)  10°/+40° C  20°/+50° C  DO-160H Section 8, Category S, Curve M  Storage Temperature (min / max)  11°/-40° C  10°/-40° C  10°/-40	Range measurement principle	•
Beam Divergence (1/e²)  Wavelength  Laser safety classification  Range resolution  Intensity recording  Maximum number of returns  Minimum range  Range accuracy 1 sigma²  10 mm  Precision single shot²  Scanning Characteristics Field of View  Lines per second [Scan Frequency]  Environmental  Operating Temperature (min / max)  Storage Temperature (min / max)  Shock  Dimensions  Weight  Dimensions  35 kg  Protection Class  Power  Power Supply Input Voltage  Power Consumption  Class 1  2 mm  10 mm  4 (First, Second, Second Last, Last)  10 mm  5 mm  50-250 lines/sec  100°/+40° C  100°/+4	Range Performance <sup>1</sup>	775 m (50 kHz) to 300 m (500 kHz)
Wavelength Laser safety classification Class 1 Range resolution Intensity recording In	Pulse Repetition Frequency	500, 200, 50 kHz (Programmable)
Laser safety classification  Range resolution  Intensity recording  Maximum number of returns  4 (First, Second, Second Last, Last)  Minimum range  1.5 m  Range accuracy 1 sigma 2  10 mm  Precision single shot 2  5 mm   Scanning Characteristics  Field of View  Lines per second [Scan Frequency]  50 – 250 lines/sec  Environmental  Operating Temperature (min / max)  -10°/+40° C  Storage Temperature (min / max)  -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  Power  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Windows	Beam Divergence (1/e <sup>2</sup> )	0.3 mrad
Range resolution 2 mm  Intensity recording 12 bits  Maximum number of returns 4 (First, Second, Second Last, Last)  Minimum range 1.5 m  Range accuracy 1 sigma 2 10 mm  Precision single shot 2 5 mm  Scanning Characteristics  Field of View 360°  Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental  Operating Temperature (min / max) -10°/+40° C  Storage Temperature (min / max) -20°/+50° C  Vibration DO-160H Section 8, Category S, Curve M  Shock DO-160H Section 7, Category A, Standard Shock  Dimensions 310 mm L x 160 mm W x 116 mm H  Weight 3.5 kg  Protection Class IP64 (Dust and splash proof)  Power  Power Supply Input Voltage 11 – 36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Windows	Wavelength	1550 nm
Intensity recording  Maximum number of returns  4 (First, Second, Second Last, Last)  Minimum range  1.5 m  Range accuracy 1 sigma²  10 mm  Precision single shot²  5 mm  Scanning Characteristics  Field of View  360°  Lines per second [Scan Frequency]  50 – 250 lines/sec  Environmental  Operating Temperature (min / max)  -10°/+40° C  Storage Temperature (min / max)  -20°/+50° C  Vibration  Characteristics  Field of View  360°  Lines per second [Scan Frequency]  50 – 250 lines/sec  DO-160H Section 8, Category S, Curve M  Shock  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  60W  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  1000 Mbit/sec Ethernet  Data Storage  Post-Processing Software  Windows	Laser safety classification	Class 1
Maximum number of returns 4 (First, Second, Second Last, Last)  Minimum range 1.5 m  Range accuracy 1 sigma 2 10 mm  Precision single shot 2 5 mm  Scanning Characteristics  Field of View 360°  Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental  Operating Temperature (min / max) -10°/+40° C  Storage Temperature (min / max) -20°/+50° C  Vibration DO-160H Section 8, Category S, Curve M  Shock Dimensions 310 mm L x 160 mm W x 116 mm H  Weight 3.5 kg  Protection Class IP64 (Dust and splash proof)  Power  Power Supply Input Voltage 11 – 36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Range resolution	2 mm
Minimum range Range accuracy 1 sigma 2 10 mm Precision single shot 2 5 mm  Scanning Characteristics Field of View Jacob Scan Frequency Solutions Sec  Environmental Operating Temperature (min / max) Operating Temperature (min / max)  Vibration DO-160H Section 8, Category S, Curve M  Shock DO-160H Section 7, Category A, Standard Shock Dimensions Jalo mm L x 160 mm W x 116 mm H Weight Jacob Sky Protection Class Power Power Supply Input Voltage Power Consumption Interfaces Connector 1 Power, RS232, PPS Connector 2 Data Storage Post-Processing Software Windows	Intensity recording	12 bits
Range accuracy 1 sigma² 10 mm  Precision single shot² 5 mm  Scanning Characteristics  Field of View 360°  Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental  Operating Temperature (min / max) -10°/+40° C  Storage Temperature (min / max) -20°/+50° C  Vibration DO-160H Section 8, Category S, Curve M  Shock DO-160H Section 7, Category A, Standard Shock  Dimensions 310 mm L x 160 mm W x 116 mm H  Weight 3.5 kg  Protection Class IP64 (Dust and splash proof)  Power  Power Supply Input Voltage 11 – 36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Maximum number of returns	4 (First, Second, Second Last, Last)
Precision single shot 2  Scanning Characteristics  Field of View  Jagoba Scan Frequency Solutions/sec  Environmental  Operating Temperature (min / max) -10°/+40° C  Storage Temperature (min / max) -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  Shock  DO-160H Section 7, Category A, Standard Shock  Dimensions  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Dimensions  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Dimensions  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Dimensions  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Dimensions  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Do-160H Section 8, Category S, Curve M  Standard Shock  Do-160H Section 8, Category S, Curve M  Standard Shock  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  Jum L x 160 mm W x 116 mm H  Weight  John Section 7, Category A, Standard Shock  John Section 7, Category A, Standard Shock  Jum L x 160 mm W x 116 mm H  Weight  John Standard Shock  John Section 8, Category S, Curve M  Standard Shock  Jum L x 160 mm W x 116 mm H  Jum L x 160 mm W x 116 mm H  Weight  John Standard Shock  Jum L x 160 mm W x 116 mm H  Jum L x 160 mm W x 116 mm	Minimum range	1.5 m
Scanning Characteristics Field of View 360° Lines per second [Scan Frequency] 50 – 250 lines/sec  Environmental Operating Temperature (min / max) -10°/+40° C Storage Temperature (min / max) -20°/+50° C  Vibration DO-160H Section 8, Category S, Curve M  Shock DO-160H Section 7, Category A, Standard Shock Dimensions 310 mm L x 160 mm W x 116 mm H  Weight 3.5 kg  Protection Class IP64 (Dust and splash proof)  Power Power Supply Input Voltage 11 – 36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Range accuracy 1 sigma <sup>2</sup>	10 mm
Field of View  Lines per second [Scan Frequency]  Environmental  Operating Temperature (min / max)  -10°/+40° C  Storage Temperature (min / max)  -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  Shock  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11–36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  1000 Mbit/sec Ethernet  Data Storage  Post-Processing Software  Windows	Precision single shot <sup>2</sup>	5 mm
Lines per second [Scan Frequency]  Environmental  Operating Temperature (min / max)  -10°/+40° C  Storage Temperature (min / max)  -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Windows	Scanning Characteristics	
Environmental Operating Temperature (min / max) -10°/+40° C Storage Temperature (min / max) -20°/+50° C  Vibration DO-160H Section 8, Category S, Curve M  Shock DO-160H Section 7, Category A, Standard Shock  Dimensions 310 mm L x 160 mm W x 116 mm H  Weight 3.5 kg  Protection Class IP64 (Dust and splash proof)  Power  Power Supply Input Voltage 11 – 36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Field of View	360°
Operating Temperature (min / max)  Storage Temperature (min / max)  -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  BO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Vibration  -20°/+50° C  DO-160H Section 8, Category S, Curve M  Standard Shock  Standard Shock  100-160H Section 8, Category S, Curve M  Standard Shock  Standard Shock  11 – 36V (Dust and splash proof)  Power  11 – 36V  1000 Mbit/sec Ethernet  Data Storage  Post-Processing Software	Lines per second [Scan Frequency]	50 – 250 lines/sec
Storage Temperature (min / max)  -20°/+50° C  Vibration  DO-160H Section 8, Category S, Curve M  Shock  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11–36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Windows	Environmental	
Vibration  DO-160H Section 8, Category S, Curve M  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Windows	Operating Temperature (min / max)	-10°/+40° C
Curve M  Shock  DO-160H Section 7, Category A, Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Windows	Storage Temperature (min / max)	-20°/+50° C
Standard Shock  Dimensions  310 mm L x 160 mm W x 116 mm H  Weight  3.5 kg  Protection Class  IP64 (Dust and splash proof)  Power  Power Supply Input Voltage  11 – 36V  Power Consumption  Interfaces  Connector 1  Power, RS232, PPS  Connector 2  Data Storage  Post-Processing Software  Standard Shock  310 mm L x 160 mm W x 116 mm H  A	Vibration	
Weight 3.5 kg Protection Class IP64 (Dust and splash proof)  Power Power Supply Input Voltage 11–36V Power Consumption 60W Interfaces Connector 1 Power, RS232, PPS Connector 2 1000 Mbit/sec Ethernet Data Storage 240 GB SSD Post-Processing Software Windows	Shock	
Protection Class IP64 (Dust and splash proof)  Power  Power Supply Input Voltage 11–36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Dimensions	310 mm L x 160 mm W x 116 mm H
Power Supply Input Voltage 11–36V Power Consumption 60W Interfaces Connector 1 Power, RS232, PPS Connector 2 1000 Mbit/sec Ethernet Data Storage 240 GB SSD Post-Processing Software Windows	Weight	3.5 kg
Power Supply Input Voltage 11–36V  Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Protection Class	IP64 (Dust and splash proof)
Power Consumption 60W  Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Power	
Interfaces  Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Power Supply Input Voltage	11 – 36V
Connector 1 Power, RS232, PPS  Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Power Consumption	60W
Connector 2 1000 Mbit/sec Ethernet  Data Storage 240 GB SSD  Post-Processing Software Windows	Interfaces	
Data Storage 240 GB SSD  Post-Processing Software Windows	Connector 1	Power, RS232, PPS
Post-Processing Software Windows	Connector 2	1000 Mbit/sec Ethernet
	Data Storage	240 GB SSD
Realtime API Library Windows, Linux	Post-Processing Software	Windows

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- 1. 99% detection probability, 50 lines/second, 23km visibility, full footprint interception.
- Max Range tested on flat targets, 50 lines/second scan speed, larger than the laser beam diameter, perpendicular angle of incidence and STD Clear visibility (23km).
- 3. Under Optech Test Conditions, contact for details.

Complies with 21 CFG 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.



Class 1 Laser Product

## **ORDERING INFORMATION**

Contact your local Teledyne Optech representative or an authorized Teledyne Optech dealer.







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