



2020

**Laser Measuring Tools
Environmental Measuring Instruments**



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Tasks Outline of products

Here you will find fields of application of the instruments for various trades. This outline will give you support to find the ideal tool for your task. These are examples only. Of course, there are many additional fields of application for many other professional groups.

Trades

-  Excavation
-  Floor covering
-  Electrical
-  Floor laying
-  Tiling
-  Windows, doors
-  Ground works
-  Landscape gardening
-  Warehouse construction
-  Shop fitting and kitchen construction
-  Painting and decorating
-  Exhibitions design and construction
-  Lifting and handling
-  Interior design
-  Carpentry, timber-frame construction
-  Civil engineering
-  Pre-fabricated construction
-  Staircase construction
-  Renovation
-  Frame construction
-  Dry mortarless construction

TRADE	TASK																													
	Excavation	Floor covering	Electrical	Floor laying	Tiling	Windows, doors	Pre-fabricated construction	Ground works	Glazing	Landscape gardening and architecture	Warehouse construction	Plumbing, heating and air conditioning	Building	Shop fitting and kitchen construction	Quantity surveying	Painting and decorating	Exhibitions design and construction	Lifting and handling	Engineering	Renovation	Interior design	Surveyor	Locksmith	Carpenter	Boat building	Civil engineering	Dry mortarless con.	Carpentry, timber-frame construction		
Line Laser	■	■		■							■					■	■	■	■		■		■	■	■		■	■	■	
Point Laser																												■		
Point and Line Laser		■	■	■	■	■			■	■	■	■				■	■	■	■	■	■	■	■	■	■		■	■	■	■
Line Laser horizontal			■	■					■	■						■						■								
Cross Laser		■	■	■	■	■			■	■						■	■	■	■	■	■	■	■	■	■		■	■	■	■
Cross Laser Professional		■	■	■	■	■			■	■						■	■	■	■	■	■	■	■	■	■		■	■	■	■
Cross Laser with receiver		■	■	■	■	■			■	■						■	■	■	■	■	■	■	■	■	■		■	■	■	■
Horizontal Laser	■			■			■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Dual Grade Laser horizontal	■							■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Horizontal and Vertical Laser				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Pipe Laser																														
Theodolite											■					■	■	■	■	■	■	■	■	■	■		■	■	■	■
Automatic Level	■						■	■		■	■					■	■	■	■	■	■	■	■	■	■		■	■	■	■
Laser Distance Meter		■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Inclinometers		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■

geo-FENNEL

New products 2020

» Here it is: our geo-FENNEL catalogue 2020 and alongside its clever new products for the construction site. Some of these novelties we really want to recommend to you.

By the way: You know us as a strong partner in the surveying field. Our range of GPS systems and Totalstations can be examined in our separate Surveying Catalogue 2018/19.

More information about us and our products on our website:
www.geo-fennel.com

Point and Line Laser



CROSSPOINTER5 GREEN SP
Page 10

Floor/Wall Line Laser



GEO6-XR GREEN
Page 14

Horizontal and Vertical Laser



FL 245HV +
Page 46

Horizontal dual grade Laser



FL 155H-G
Page 52

Single grade horizontal Laser with vertical function



FL 300HV-G EASYGRADE
Page 56

GNSS System



FGS LITE
Page 86

Line Laser



GEO1X-360 GREEN
Page 20

Horizontal and Vertical Laser



FL 220HV
Page 44

Measuring Tapes



GEOTAPE 2in1
Page 93

Universal Tripods



FS 24-M W/S
Page 129

LINE LASERS

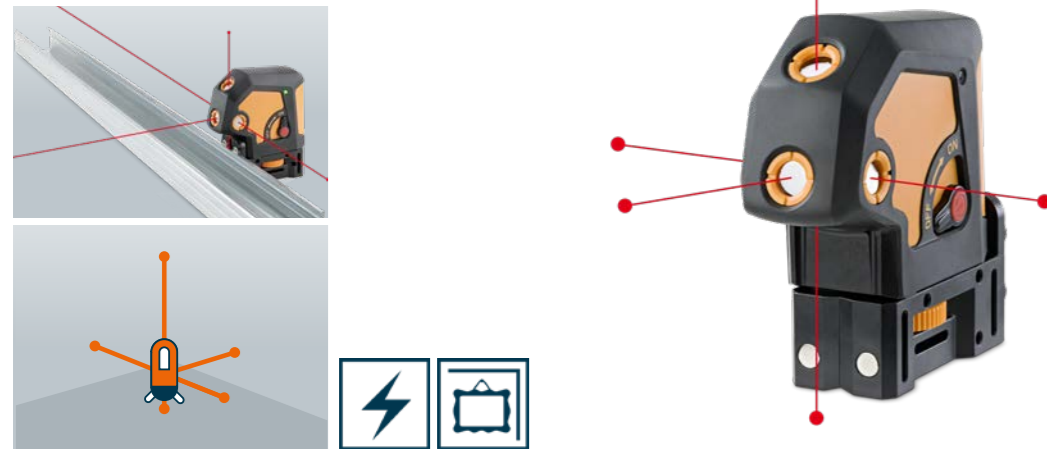
PRECISION IN EVERY ASPECT: OUR ALL-ROUNDERS

Every single device in our range of line lasers is a winner. We provide individual products that are exactly adapted to your particular needs. As different as these demands may be, one thing is true for all geo-FENNEL line lasers: They consistently impress users with a high degree of precision and guarantee you the best measurement results – in every situation.



Geo5P 5-Point Laser Five directions

- » 5 self-levelling laser dots at right angles to each other: up, down, forward, left, right. For plumbing, alignments, leveling, transfer of points and many more applications.
- » Compact and handy size. Shock-resistant design suitable for robust use on construction sites.



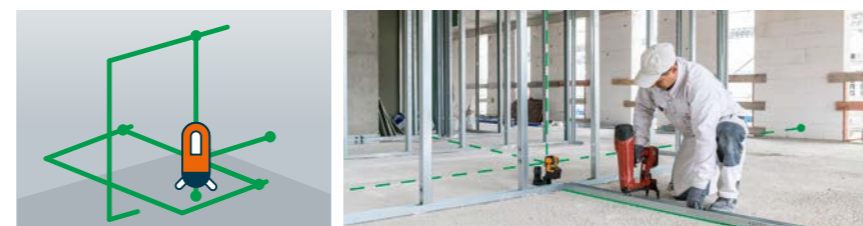
TECHNICAL DATA		FEATURES	SUPPLIED WITH GEO5P
Self-levelling range	± 3.5°	<ul style="list-style-type: none"> 5 laser dots (up, down, forward, left, right) Out-of-level alarm Multi-functional mount with <ul style="list-style-type: none"> strong magnets for optimal use at drywall construction rails can be fixed to a wall (magnetic or screw hanging) strap attachment Transport lock 1/4" and 5/8" tripod thread 	ART.-NO. 555050
Accuracy	± 2 mm / 10 m		<ul style="list-style-type: none"> Multi-functional mount Magnetic target 3 x AA Alkaline battery Padded carrying bag
Working range	30 m*		
Laser diode / laser class	635 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	20 h		
Temperature range	-10 °C to +50 °C		
Dust / water protection	IP 54		
Weight (instrument only)	0.5 kg		
	* depending on room illumination		

CrossPointer5 GREEN SP Five points plus cross

- » A self-levelling GREEN line laser with outstanding line visibility up to 50 m
Combination of a 5 point and cross line laser
Projects 6 reference points at 90° to each other
- » Horizontal line with 180° fan angle intersects left/right points
Vertical line with 160° fan angle (beyond the zenith point)
- » Laser points rotate 360° around vertical axis
- » Pulse-function to extend working range with receiver (optional)



Selection PRO

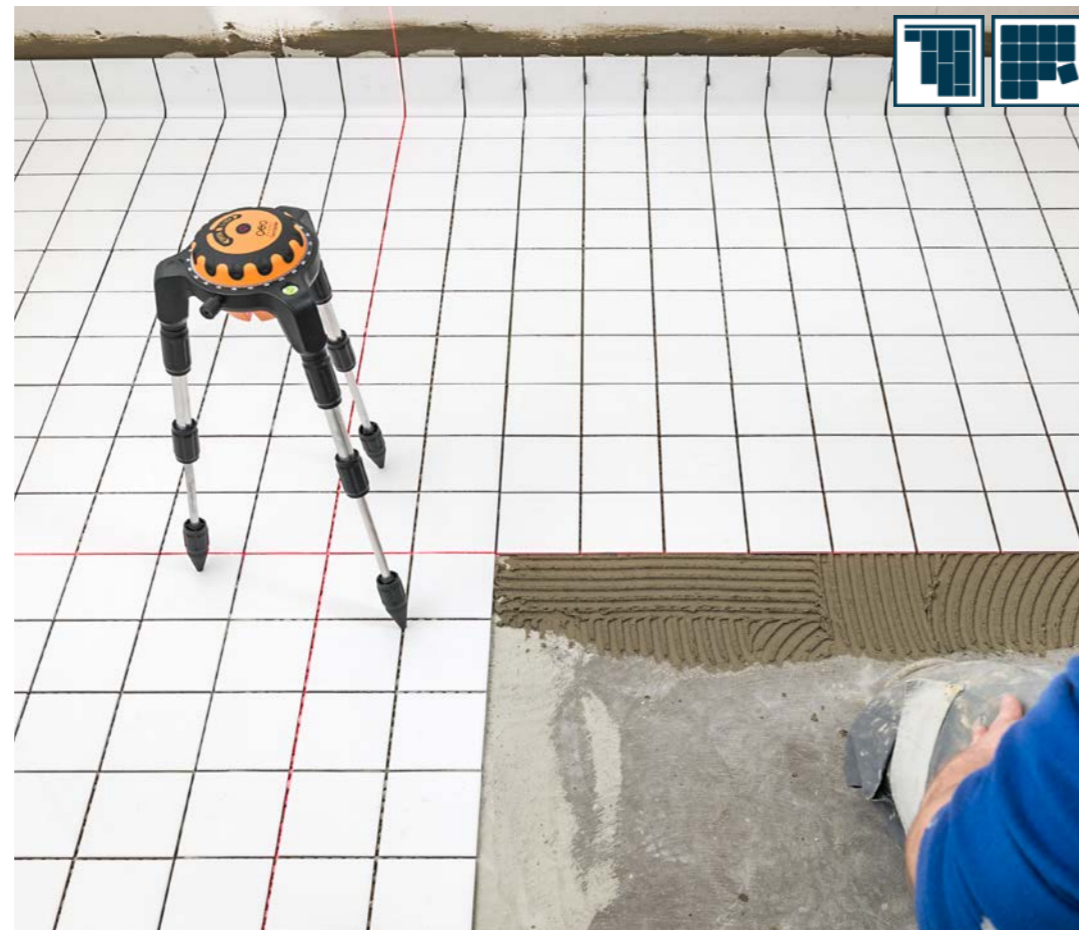


TECHNICAL DATA	
Self-levelling range	± 3°
Accuracy	± 3 mm / 10 m
Laser line function	
Working range w/o receiver	50 m* (radius)
Working range with receiver	80 m (radius)
Fan angle Hz Line	180°
Fan angle V Line	160°
Laser point function	5 laser dots
Working range without receiver	50 m
Power supply	Li-Ion
Operating time Li-Ion	
All laser lines & dots	6 h
All laser lines	8 h
All laser dots	24 h
Dust/water protection	IP 54
Laser diode / class	green / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	0,7 kg
	* depending on room illumination

FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> 2 laser lines form a green laser cross 5 laser points: back, left, right, ceiling, floor Laser points rotate 360° around vertical axis Plumbing function Self-levelling function can be switched off for manual use Audible & visual alarm when out of level Use with receiver FR 75-MM / FR 55 / 55-M (optional) Multi-functional mount <ul style="list-style-type: none"> height adjustable for wall-hanging with screw strap attachment strong magnets on back face 1/4" and 5/8" thread for use with tripods etc. 	ART.-NO. 531550 <ul style="list-style-type: none"> Multi-functional mount Li-Ion battery Intelligent charger Magnetic target Container

GeoSpider The tilers best friend!

- » **2 high visibility laser lines at 90° to each other**
Ideal for laying all types of floor coverings such as tiles, laminates, carpets, etc.
- » Working range 40 m*
- » Layout any angle between 0 and 360°
- » 360° graduation and fine motion control for accurate alignment
- » Circular bubble for manual levelling on uneven surfaces



TECHNICAL DATA	GEOSPIDER	FEATURES	SUPPLIED WITH GEOSPIDER
Accuracy	± 3 mm / 10 m	<ul style="list-style-type: none"> · High visibility laser lines achieved by our new innovative design · Independently height adjustable legs for optimum results over the full working range · Laser lines switchable separately · Fine motion control for accurate alignment · Fully rotatable laser head with 360° graduation for optimum flexibility · Integrated circular bubble for manual levelling on uneven surfaces 	<ul style="list-style-type: none"> · 4 x AA Alkaline battery · 2 x Magnetic target · Padded bag
90° angle accuracy	± 3 mm / 10 m		
Working range	40 m*		
Dust / water protection	IP 52		
Laser class	2		
Operating time	12 h		
Temperature range	-10°C to +45°C		
	* depending on room illumination		



Square Liner II At the right angle

- » The angle template generates two laser lines at 90° to each other. Ideal for use on floor and all tiling!



TECHNICAL DATA	SQUARE LINER II
Accuracy	± 3 mm / 10 m
Working range	max. 30 m*
Laser diodes	2 x 635 nm
Laser class	2
Power supply	2 x 1,5 V AA Alkaline
Operating time	48 h
Temperature range	0°C to +40°C
	* depending on room illumination

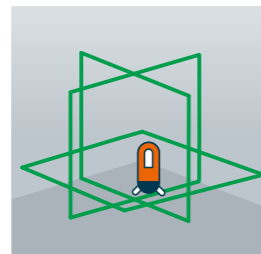
FEATURES	SQUARE LINER II
<ul style="list-style-type: none"> · Fine and clear visible laser lines · 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling · Built-in circular and tubular vials for horizontal and vertical alignment 	<ul style="list-style-type: none"> · Batteries · Magnetic target · Case

Geo6-XR GREEN

The latest innovation for installing wall and floor coverings

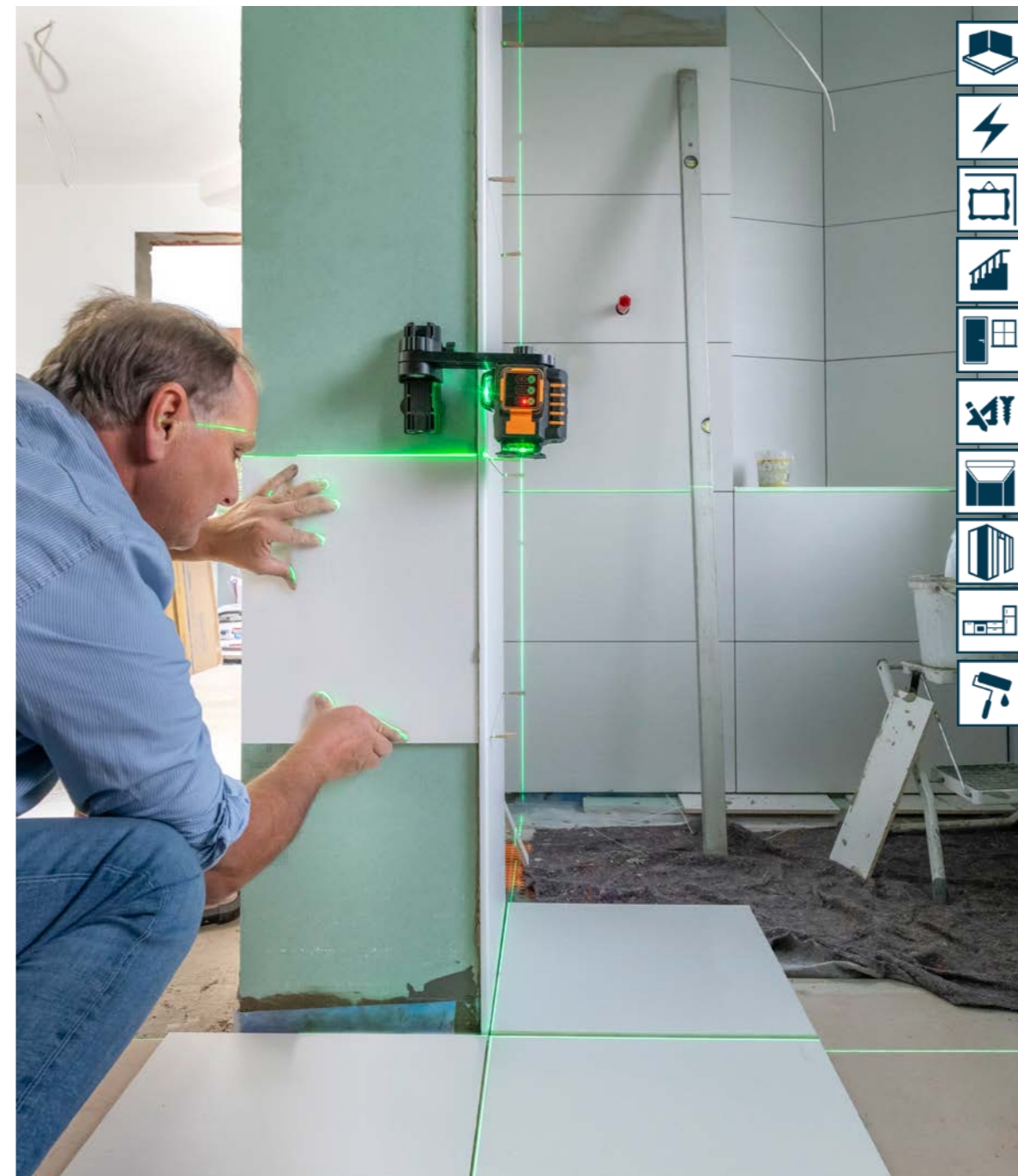
» A comprehensive solution for installation, refurbishment and maintenance

- » 3x 360° highly visible green laser lines all perpendicular to each other
 - » Projecting right angles everywhere at the floor for straight and diagonal laying of tiles
 - » Installation and verification of correct floor height
 - » Checking level, flatness and parallelism of walls and floors.
-
- » 3 x 360° green laser lines - visible up to 40 m
 - » 6 mm minimum distance of the laser line to the wall
 - » 8 mm minimum distance of the laser line to the floor
 - » Height adjustable platform with a range from 25 to 85 mm
 - » for precise height control when setting out floor coverings
 - » 20 mm fixed height adaptor with 5/8" thread
 - » Height adjustable wall-mount with swivel-mount support rail
 - » Optimise floor tile layout with free-hanging tripod mount
 - » Monitor and correct floor levels using the height measurement pins
 - » Pulse-function to extend working range with receiver (optional)



Selection PRO

green laser



TECHNICAL DATA		GEO6XR GREEN
Self-levelling range		± 3°
Accuracy		± 2 mm / 10 m
Laser diode / class		green / 2
Working range without receiver		40 m* (radius)
Working range with receiver		60 m** (radius)
Operating time / Power supply		
	1 x 360°	15 h / Li-Ion
	2 x 360°	7 h / Li-Ion
	3 x 360°	5 h / Li-Ion
Dust/waterprotection		IP 54
Temperature range		-10°C to +45°C
Size		115 x 96 x 118 mm
Weight (instrument with battery)		0,8 kg
		* depending on room illumination
		** depending on direction of laser

FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> » 3 x 360°-Laser lines - form 6 laser crosses » Laser lines switchable separately » Plumbing function » Minimum laser line distance to floor 8 mm » Minimum laser line distance to wall 6 mm » Height adjustable platform from 25 to 85 mm » Wall-mount <ul style="list-style-type: none"> » height and side adjustable » can be fixed to a wall » Attachment to magnetic surfaces <ul style="list-style-type: none"> » strap attachment » Visual and audible alarm when out of level » Self-levelling function can be locked for manual use » 5/8" thread for use with tripods etc. (bottom / face adaptor) » 1/4" thread for use with adaptor etc. (top side) » Use with receiver FR 75-MM / FR 55 / FR 55-M (optional) 	<p>ART.-NO. 533200</p> <ul style="list-style-type: none"> » Li-Ion battery » Intelligent Charger & USB 3.0 Cable » Battery case for alkaline batteries » Height adjustable platform » Wall-mount » Support rail » 20 mm Fixed height adaptor with 5/8" » 3x Height measurement pins » Magnetic target » Container



FL 10-Cross

The universal laser for interior work

» Misalignment is a thing of the past with the FL 10 cross line laser. Whatever your internal application – alignment of wall tiles, setting out for drilling holes, transfer of levels or precise positioning of doors and windows. Wherever you have something to measure – the result will convince you.



» FL 10-Cross SET



TECHNICAL DATA	FL 10-CROSS
Self-levelling range	± 3°
Accuracy	± 5 mm / 10 m
Working range without receiver	10 m* (radius)
Power supply	3 x AA Alkaline
Operating time (all lines switched on)	18 h
Dust / water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	0,4 kg
	* depending on room illumination

FEATURES	SUPPLIED WITH FL 10-CROSS
<ul style="list-style-type: none"> · A vertical and horizontal line combine to form a laser cross. · Laser lines switchable separately · Visual alarm when out of self-levelling range · 1/4" tripod connection · Multifunctional mount (magnetic and with 1/4" tripod connection) 	<ul style="list-style-type: none"> · 3 x AA Alkaline battery · Multifunctional mount · Padded carrying case

SUPPLIED WITH FL 10-CROSS SET
<ul style="list-style-type: none"> · 3 x AA Alkaline battery · Multifunctional mount · Padded carrying case · Tripod FS12

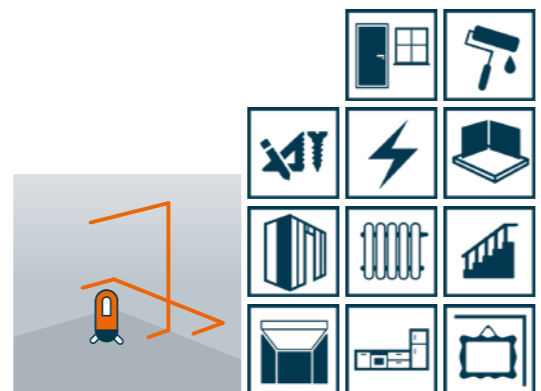


FL 40-PowerCross Plus SP

Convincing along the whole line

» FL 40 PowerCross Plus SP is a Selection PRO product with special features.

- » Outstanding visibility of the laser lines
- Very long vertical line with 150° fan angle (beyond zenith)
- Pulse-function for use with receiver (optional)
- Self-levelling function can be switched off for manual use
- Extremely rugged design for rough use at construction site
- Product withstands drop up to 1 m



Selection PRO

SUPPLIED WITH
FL 40-POWERCROSS PLUS SP

ART-NO. 541510

- Multi-functional mount
- 4 x AA Alkaline battery
- Padded bag

OPTIONAL

ART-NO. 541511

- Charger
- Li-Ion batteries



TECHNICAL DATA	FL 40-POWERCROSS PLUS SP	FLG 40-POWERCROSS PLUS GREEN SP	FEATURES
Self-levelling range	± 3°	± 3°	<ul style="list-style-type: none"> · 1 Laser cross · Laser lines switchable separately · TILT function for manual use · Visual alarm when out of level · Use with receiver FR 75-MM / FR 55 / 55-M (optional) · Multi-functional mount <ul style="list-style-type: none"> · height adjustable · for wall-hanging with screw · strap attachment · strong magnet on back side · for tripod fixing with 5/8" or 1/4" thread
Accuracy	± 3 mm / 10 m	± 3 mm / 10 m	
Working range without receiver	30 m* (radius)	40 m* (radius)	
Working range with receiver (optional)	80 m	100 m	
Fan angle horizontal	135°	135°	
Fan angle vertical	150°	150°	
Power supply	4 x AA Alkaline	4 x AA Alkaline	
Operating time (all lines switched on)	20 h	9 h	
Dust / water protection	IP 54	IP 54	
Laser diode / class	red / 2	green / 2	
Temperature range	-10 °C to +45 °C	-10 °C to +45 °C	
Weight (instrument with battery)	0,4 kg	0,4 kg	
	*depending on room illumination		

FLG 40-PowerCross Plus GREEN SP

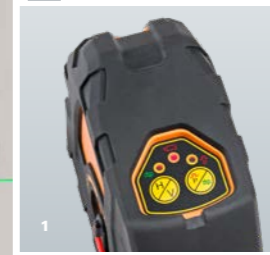
Green is more beautiful

» FLG 40-PowerCross Plus GREEN SP is a Selection PRO product with special features.

- » Outstanding visibility of the laser lines
- Very long vertical line with 150° fan angle (beyond zenith)
- Pulse-function for use with receiver (optional)
- Self-levelling function can be switched off for manual use
- Extremely rugged design for rough use at construction site: product withstands drop up to 1 m



1 Keypad



green laser

SUPPLIED WITH
FLG 40-POWERCROSS PLUS GREEN SP

ART-NO. 541560

- Multi-functional mount
- 4 x AA Alkaline battery
- Padded bag

OPTIONAL

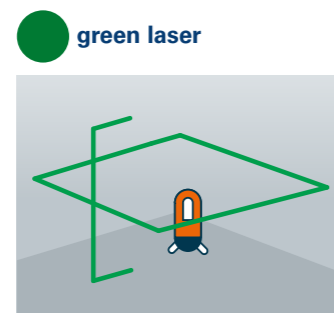
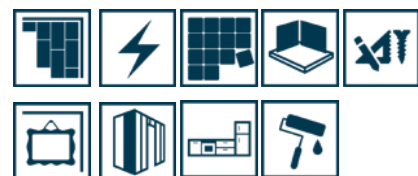
ART-NO. 541561

- Charger
- Li-Ion batteries

Geo1X-360 GREEN

A self-levelling GREEN line laser with outstanding line visibility

- » Self-levelling function can be switched off for manual use
- » Pulse-function to extend working range with receiver (optional)



TECHNICAL DATA	GEO1X-360 GREEN
Self-levelling range	± 3°
Accuracy	± 3 mm / 10 m
Working range w/o receiver	30 m* (radius)
Working range with receiver	50 m** (radius)
Fan angle Hz Line	360°
Fan angle V Line	135°
Power supply	4 x AA Alkaline
Operating time (all lines switched on)	10 h
Dust / water protection	IP 54
Laser diode / class	green / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	0.65 kg
	*depending on room illumination
	**depending on direction of the laser

FEATURES
<ul style="list-style-type: none"> · 1 Laser cross · 1 x 360° horizontal laser line · Laser lines switchable separately · TILT function for manual use · Visual alarm when out of level · Use with receiver FR 75-MM / FR 55 / 55-M (optional) · Multi-functional mount <ul style="list-style-type: none"> · height adjustable · for wall-hanging with screw · strap attachment · strong magnet on back side · 1/4" and 5/8" thread for use with tripods etc.

SUPPLIED WITH
<p>ART-NO. 533100</p> <ul style="list-style-type: none"> · Multi-functional mount · 4x AA Alkaline battery · Padded bag



Geo6X SP & Geo6X SP KIT

3 x 360° in red

Selection PRO

- » Multi-functional for versatile levelling jobs at indoor construction sites.
- » Simple outfit with alkaline batteries and bag



Multi-functional mount 1

Battery compartment 2

FEATURES GEO6X SP

- 3 x 360°-laser lines form 6 laser crosses
- Laser lines switchable separately
- Plumbing function
- Laser plane distance to wall/ceiling min. 12 mm
- Magnets at the front and side for connection to dry wall track
- Use with receiver (optional)
- Self-levelling function can be locked for manual use
- 5/8" & 1/4" connection at the instruments bottom

ADDITIONAL WITH GEO6X SP KIT UND GREEN KIT

- Multi-functional mount
- magnets on the back
- strap attachment
- height adjustable
- 5/8" tripod connection



SUPPLIED WITH GEO6X SP

ART-NO. 534000

- 4 x Alkaline batteries
- Magnetic target
- Softbag



SUPPLIED WITH GEO6X SP KIT

ART-NO. 534100

- Multi-functional mount
- Li-ion battery, charger
- Charger with USB 3.0 cable
- Magnetic target
- Battery case for alkaline batteries
- Container

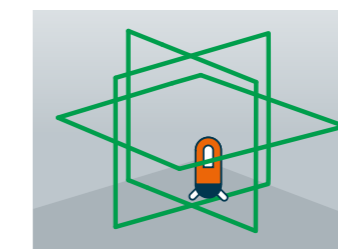


Geo6X SP GREEN KIT

Like red, even better in green

green laser

- » Multi-functional for versatile levelling jobs at indoor construction sites.
- » Full kit with Li-Ion batteries, charger, wallmount, container, offering the benefits of an innovative tool for the professional user.



SUPPLIED WITH GEO6X SP GREEN KIT

ART-NO. 534500

- Multi-functional mount
- Li-ion battery, charger
- Charger with USB 3.0 cable
- Magnetic target
- Battery case for alkaline batteries
- Container



OPTIONAL

ART-NO. 500520

- Receiver FR 55-M

ART-NO. 500510

- Receiver FR 55

ART-NO. 257200

- Receiver FR 75-MM

ART-NO. 290560

- Walltrack Adapter WS 1



* depending on room illumination

FLG 64 GREEN HP

Green laser lines for exceptional visibility

» High efficiency green beam diodes generate clean precise lines.

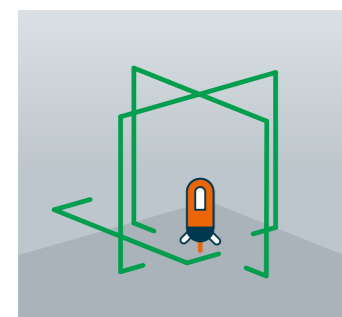
- » 360° circle with slow motion screw for accurate alignment
- » Li-Ion batteries and charger
- » Pulse-function for use with receiver (optional)



Intuitive control panel 1



green laser



TECHNICAL DATA	FLG 64-GREEN HP	FEATURES	SUPPLIED WITH FLG 64-GREEN HP
Self-levelling range	± 3°	<ul style="list-style-type: none"> · 4 vertical lines at 90° to each other · 1 horizontal line 130° · Plumb down beam (red) · Laser lines switchable separately · Plumbing function · Self-levelling function can be locked for manual use (inclined applications) · Audible and visual alarm when out of level · Use with receiver FR 55 / 55-M (optional) · Integrated floor tripod · Slow motion screw for horizontal alignment · 5/8" thread for use with tripods etc. 	ART.-NO. 580400
Accuracy	± 2 mm / 10 m		· Li-Ion batteries
Working range (radius)			· Charger
-without receiver	30 m*		· Alkaline battery box
-with receiver (optional)	60 m		· Laser intensive glasses
Power supply	Li-Ion		· Magnetic target
Operating time (all lines switched on)	7 h		· Container
Charger can be used as power supply	yes		
Dust / water protection	IP 54		
Laser class	2		
Temperature range	-5°C to +50°C		
Weight (instrument with battery)	1,3 kg		
	* depending on room illumination		





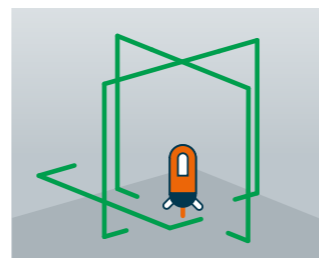
● green laser

FLG 66-Xtreme GREEN SP

The toughest

Selection PRO

- » **FLG 66-Xtreme GREEN SP is a Selection PRO product with special features.**
- » The new Selection PRO GREENLASER-Technology – the FLG 66-Xtreme GREEN SP
 - Outstanding visibility of the laser line up to 40 m
 - A clear narrow laser line
- » This new generation of cross laser withstand adverse conditions and rough handling on construction sites.
 - Rugged technical design: Stable internal components assure function and accuracy
 - **Perfect sealing assures dust and water protection according to IP 65**
 - Batteries are a thing of the past as the FLG 66-Xtreme GREEN SP utilises the latest Li-Ion battery technology



TECHNICAL DATA	FLG 66-Xtreme GREEN	FEATURES	SUPPLIED WITH FLG 66-XTREME GREEN SP
Self-levelling range	± 2°	<ul style="list-style-type: none"> · 4 vertical lines at 90° to each other · 1 horizontal line 130° · Plumb down beam · Laser lines switchable separately · Plumbing function · Self-levelling function can be locked for manual use (inclined applications) · Audible and visible alarm when out of level · Integrated floor tripod · Slow motion screw for horizontal alignment · Use with receiver (optional) 	ART.-NO. 580550
Accuracy	± 2 mm / 10 m		· Li-Ion batteries
Working range without receiver	40 m* (radius)		· Charger
Working range with receiver	100 m* (radius)		· Alkaline battery box
Laser diode / class	- / 2		· Laser intensive glasses
Operating time (all lines switched on)	15 h		· Magnetic target
Power supply	Li-Ion		· Container
Charger can be used as power supply	no		
Dust / water protection	IP 65		
Temperature range	0 °C to +40 °C		
Weight (instrument with battery)	1.4 kg		
	* depending on room illumination		

With circular level on top 1
Case with FLG 66-Xtreme GREEN SP and equipment 2





Selection PRO

FL 70 Premium-Liner SP Technology at its best

» FL 70 SP is a Selection PRO product with special features.

- Outstanding visibility of the laser line
- Li-Ion battery technology
- High accuracy of +/- 1 mm / 10 m
- Motorized self-levelling cross line laser
- 4 vertical lines at 90° to each other, 360° horizontal line, plumb up cross, plumb down beam
- Quick self-levelling and extremely stable performance.
- Slope function: laserplane can be tilted by using the remote control



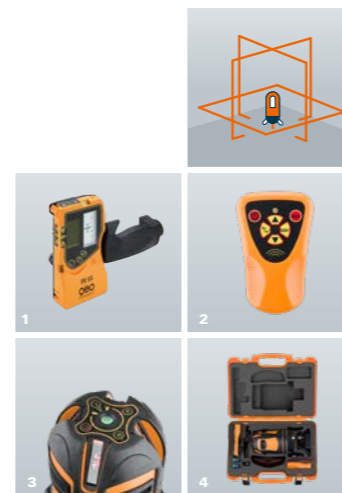
Selection PRO

Receiver FR 55 for 80 m working range 1

Remote control 2

With circular level on top 3

Case with FL 70 Premium-Liner SP and equipment 4



TECHNICAL DATA	FL 70 PREMIUM-LINER SP
Self-levelling range	± 3°
Accuracy	± 1 mm / 10 m
Working range w/o receiver	30 m*
Working range with receiver	80 m
Power supply	Li-Ion
Operating time	6 - 14 h
	depending on number of laser lines switched
Dust / water protection	IP 54
Laser diode	635 nm
Laser class	2
Temperature range	-10°C to +45°C
	* depending on room illumination

FEATURES
<ul style="list-style-type: none"> · 5 laser crosses · 4 vertical lines at 90° to each other · 360° horizontal line · Laser cross to the ceiling · Plumb down beam · Self-levelling function can be switched off · Remote control for setting slopes · Adjustable 360° circle · Slow motion screw · Audible and visible alarm when out of level · Integrated floor tripod · 5/8" thread for use with standard tripod

SUPPLIED WITH FL 70 PREMIUM-LINER SP WITHOUT FR 55
ART-NO. 582010
<ul style="list-style-type: none"> · Integrated floor tripod · Remote control · Li-Ion batteries and battery charger · Magnetic target · Laser glasses · Adapter for tripod connection · Compartment for alkaline batteries · Container

SET FL70 PREMIUM-LINER SP + FR 55
ART-NO. 582000



1 Remote control

2 Hard case

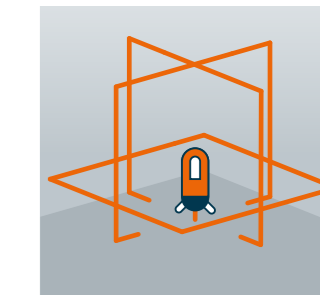


FL 1000 HP State-of-the-art

» With combi-receiver FR 10.
Detect rotating beams and line laser with one device.

» With the ultimate FL 1000 HP even difficult measuring tasks become a mere child's play. Two vertical laser planes at 90° to each other formed through clearly visible laser lines – and additionally one 360° horizontal laser line projected by the rotation function.

FL 1000 HP the ultimate for interior works! Even for the most complicated and specialized applications. The whole laser plane can, for example, be tilted manually if the object to be measured does not stand level – such as in the interior construction of ships.



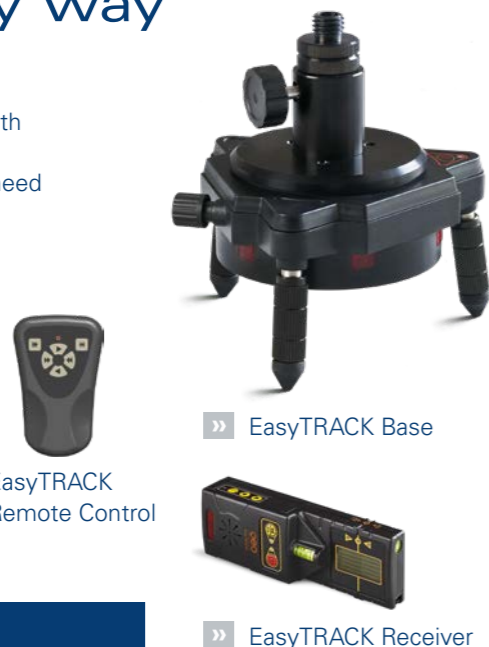
TECHNICAL DATA	FL 1000 HP	FEATURES	SUPPLIED WITH
Self-levelling range	± 5°	<ul style="list-style-type: none"> · Electronic self-levelling · Horizontal rotating laser beam, visible · 4 vertical laser lines at 90° to each other · Laser cross to the ceiling · Plumb down beam · TILT function · Slope setting · Combi-receiver for rotating and line beams · Remote control · On / off remote control · Adjustable 360° circle · Slow motion screw · Automatic shut-off / audible alarm when out of level · Integrated floor tripod · 5/8" thread for builders' tripod 	ART-NO. 585020
Power supply	NiMH / Alkaline		
Operating time	10 h		
Charger = power supply	yes		
Laser diode / laser class	635 nm / 2		
Temperature range	-10 °C to +40 °C		
Weight	2,85 kg		
Dust / water protection	IP 54		
Rotating laser			
Accuracy	± 1 mm / 10 m		
Gradual slope setting in X and Y axis	± 5° (± 9%)		
TILT-function	yes		
Working range without receiver Ø	40 m*		
Working range with receiver Ø	400 m		
Scanning without receiver	30 m*		
Scanning range	10/30/60°		
Rotating speed rpm	200, 500		
Line laser			
Accuracy	± 2 mm / 10 m		
Working range without receiver	20 m*		
Working range with receiver	60 m		
	* depending on room illumination	<ul style="list-style-type: none"> · Combi-receiver FR 10 · Charger and batteries · Magnetic target · Laser intensive glasses · Remote control · Hard case 	

EasyTRACK Plus for Line Lasers

Optimum alignment - the quick and easy way

- » The vertical laser line automatically aligns with the on-level position of the receiver
- Saves you time and money eliminating the need for manual alignment
- One-person operation

» **NEW: Including remote control for easy positioning of the vertical line to any desired point**



TECHNICAL DATA	EASYTRACK BASE
Centring accuracy TRACKING	± 1 mm
Working range radius	50 m (depending on laser model)
Instrument connection	5/8" and 1/4"
Power supply / operating time	4 x AA Alkaline / 15 h
Temperature range	-10°C to +50°C
Dust / water protection	IP 54

TECHNICAL DATA	EASYTRACK RECEIVER
Accuracy	± 1 mm
Display	Front, back and side LED
Temperature range	-10°C to +50°C
Power supply / operating time	3 x AA Alkaline / 50 h
Tones	3 (switchable)
Automatic shut-off	yes
Dust / water protection	IP 54

- FEATURES**
- 360° horizontal orientation in motorised mode
 - Automatic axis alignment of the vertical line with on-level position of receiver (tracking)*
 - Alignment of the vertical line to any position with the remote control**
 - Manual slow motion screw for axis alignment
 - For line lasers with either red or green beam
- * Compatible with CrossPointer5 GREEN, Geo6-XR GREEN, FL 40-PowerCross Plus/ GREEN, Geo1X-360 GREEN, Geo6X/ GREEN, FLG 64-GREEN, FLG 66-Xtreme, FL 70, FL 1000
- ** Compatible with any line laser (geo-FENNEL and other brands) except FL 70

- SUPPLIED WITH EASYTRACK**
- ART.-NO. 290900
- EasyTRACK Base
 - EasyTRACK Receiver
 - EasyTRACK Remote control
 - 4 x AA batteries (Base)
 - 3 x AA batteries (Receiver)
 - 1 x 9V battery (Remote Control)
 - Soft bag



FPL P & FPL L Positioning Laser

» Positioning lasers are especially suited for use in manufacturing industry and in trade for marking and positioning.



FPL C Positioning Cross Laser



» FPL C-5
FPL C-10
FPL C-20

FEATURES FPL L	FEATURES FPL C
· Projects a clearly visible laser line	· Projects a clearly visible laser line
· Switched power supply	· Switched power supply
· Multi-functional mount (rotatable and swivelling)	· Multi-functional mount (rotatable and swivelling)

TECHNICAL DATA	FPL L-5	FPL L-10	FPL L-20	FPL C-5	FPL C-10	FPL C-20
	ART.-NO. 519005	ART.-NO. 519010	ART.-NO. 519020	ART.-NO. 519105	ART.-NO. 519110	ART.-NO. 519120
Visible laser line	red	red	red	red	red	red
Laser wave length	635 nm	635 nm	635 nm	635 nm	635 nm	635 nm
Integrated laser diode	5 mW	10 mW	20 mW	5 mW	10 mW	20 mW
Laser output power	< 1 mW	< 1 mW	< 5 mW	< 1 mW	< 1 mW	< 5 mW
Laser class	2	2	3R	2	2	3R
Focusing	0 – 10 m focusable	0 – 10 m focusable	0 – 10 m focusable	10 m	10 m	10 m
Fan angle	84°	84°	84°	120°	120°	120°
Temperature range	-10 °C to +40 °C	-10 °C to +40 °C	-10 °C to +40 °C	-10 °C to +40 °C	-10 °C to +40 °C	-10 °C to +40 °C
Dust / water protection	IP 41	IP 41	IP 41	IP 43	IP 43	IP 43
Dimensions (without mount)	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 41 x 55 mm	Ø 41 x 55 mm	Ø 41 x 55 mm

Line and Cross Lasers Outline

	GEO5P	CROSSPOINTER5 GREEN SP	GEOSPIDER	SQUARE LINER II	GEO6-XR GREEN	FL 10-CROSS	FL 40-POWER-CROSS PLUS SP	FLG 40-POWER-CROSS PLUS GREEN SP
ART.-NO.	555050	531550	552000	551000	533200	540100	541510	541560
								
Laser class	2	2	2	2	2	2	2	2
Scheme of projected lines								
Vertical lines	-	1	-	-	4	1	1	1
Horizontal laser range / angle	-	180°	-	-	360°	135°	135°	135°
Laser points	5	5	-	-	-	-	-	-
Plumb down beam	yes	yes	yes	-	-	-	-	-
Accuracy / 10 m	± 2 mm	± 3 mm	± 3 mm	± 3 mm	± 2 mm	± 5 mm	± 3 mm	± 3 mm
Dust / water protection	IP 54	IP 54	IP 52	IP 52	IP 54	IP 54	IP 54	IP 54
Working range w/o receiver (radius)	30 m	50 m	20 m	10 m	40 m	10 m	30 m	40 m
Working range with receiver (radius)	-	80 m	-	-	60 m	-	80 m	100 m
Power supply	Alkaline	Li-Ion	Alkaline	Alkaline	Li-Ion	Alkaline	Alkaline	Alkaline
Receiver	-	optional	-	-	optional	-	optional	optional
Page	10	10	12	13	14	16	18	19

GEO1X-360 GREEN	GEO6X SP	GEO6X SP KIT	GEO6X GREEN KIT SP	FLG 64-GREEN HP	FLG 66-XTREME GREEN SP	FL 70 PREMIUM-LINER SP	FL 1000 HP	
533100	534000	534100	534500	580400	580550	582000	585020	
								
2	2	2	2	2	2	2	2	Laser class
								Scheme of projected lines
1	4	4	4	4	4	4	4	Vertical lines
360°	360°	360°	360°	130°	130°	360°	360°	Horizontal laser range / angle
-	-	-	-	-	-	-	-	Laser points
-	yes	yes	yes	yes	yes	yes	yes	Plumb down beam
± 3 mm	± 2 mm	± 2 mm	± 2 mm	± 2 mm	± 2 mm	± 1 mm	± 1 mm	Accuracy / 10 m
IP 54	IP 54	IP 54	IP 54	IP 54	IP 65	IP 54	IP 54	Dust / water protection
30 m	30 m	30 m	40 m	30 m	40 m	30 m	40 m	Working range w/o receiver (radius)
50 m	60 m	60 m	70 m	60 m	100 m	200 m	400 m	Working range with receiver (radius)
Alkaline	Alkaline	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	NiMH / Alkaline	Power supply
optional	optional	optional	optional	optional	optional	inclusive	inclusive	Receiver
20	22	22	23	24	26	28	29	Page

ROTATING LASERS

MORE PRECISELY:
EASY TO USE, ACCURATE,
ROBUST AND RELIABLE.

Efficient, flexible and reliable – some of the characteristics that define all geo-FENNEL rotating lasers. Whether used for interior applications or on the most demanding outdoor construction sites, in the rain, wind, cold or hot conditions: Our robust, water and dust protected laser measuring instruments provide the precise measuring results, even under unfavourable weather conditions.



ROTATING LASER FOR INTERIOR CONSTRUCTION

These lasers are specially tailored for indoor use with specific functions and accessories (depending on model):

- Green laser diode and PowerSwitch Technology for best visibility of laser line indoors
- Scanning and point function
- Remote control to use the instrument from on top of a ladder or scaffolding
- Remote control function can be switched off to prevent other remotes from controlling the laser
- TRACKING function for easiest axe alignment
- Rich accessories like receiver, remote control, battery and charger, wall and floor mount, target plate and laser glasses

Areas of application:

- All areas of interior construction
- Building dry walls
- Floor screed
- etc.

FLG 190A-GREEN Outstanding laser line visibility

» Perfect for interior applications with outstanding laser line visibility due to PowerSwitch-Technology.

- » Incorporating a green beam laser diode for improved visibility under difficult light conditions
- Ideal for use in bright surroundings, over long distances and against dark measuring surfaces
- Instant self-levelling makes this laser ideal when applications necessitate frequent positional changes



 green laser

1 Receiver FR 45

2 Receiver FR-DIST 30



TECHNICAL DATA		FEATURES
Self-levelling range	± 3°	<ul style="list-style-type: none"> · Instant self-levelling · Horizontal fully automatic self-levelling rotating laser · Vertical levelling using adjustment screw · Variable rotating speed · Permanent 90° beam to zenith · Rechargeable NIMH batteries with intelligent charger · Integrated floor / wall mount with adjustment screw
Accuracy	± 1,5 mm / 10 m	
Working range without receiver Ø	40 m*	
Working range with receiver Ø	600 m	
Rotating speed (rpm)	200, 400, 600	
Power supply	NIMH	
Operating time	10 h	
Dust / water protection	IP 54	
Laser diode / class	635 nm / 2	
Temperature range	-10°C to +45°C	
Weight (instrument with battery)	1,5 kg	
* depending on the room illumination		



SUPPLIED WITH
FL 190A GREEN (LC 2) + FR 45

ART.-NO. 292195

- Receiver FR 45 with clamp for levelling staff
- NiMH batteries
- Charger
- Carrying case

SUPPLIED WITH
FL 190A GREEN (LC 2) + FR-DIST 30

ART.-NO. 292198

- Receiver FR-DIST 30 with clamp for levelling staff
- NiMH batteries
- Charger
- Carrying case

FLG 245HV-GREEN Professionally interior

ROTATING LASER

INTERIOR



 green laser

- » **A professional multipurpose laser for indoor applications**
 - Green laser for enhanced visibility
 - PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser
 - Long distance working range and outstanding line visibility for indoor applications

- » **User-friendly operating concept**
 - For the ultimate in ease-of-use the only control functions on the instrument power on/off the laser beam and the remote control
 - All additional functions including scanning and slope setting are accessed from the remote control

- » **Highlights**
 - Indoor use: Outstanding line visibility without using a receiver. Versatile with rotating, scanning and point functions
 - Outdoor use: IP 54 protection, long working range, TILT-Function,
 - Numerous accessories supplied as standard - check them out

TECHNICAL DATA	FLG 245HV-GREEN	FEATURES
Self-levelling	horizontal/vertical	<ul style="list-style-type: none"> · Working range up to 1000 m diameter · Dust / water protection IP 54 · Variable scanning and laser point mode · Permanent 90° plumb beam · Automatic TILT alarm function · Auto-shut-off when out of level · Manual slope setting of X and Y axis · Remote control function (on/off)
Grade	manual	
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	green	
Accuracy horizontal	1,0 mm / 10 m	
Accuracy vertical	1,5 mm / 10 m	
Working range with FR 45 Ø	1000 m	
Rotating w/o receiver Ø	40 m	
Scanning w/o receiver / radius	60 m	
Scanning	2 step	
Laserdot mode	yes	
90° plumb beam up	yes	
Slope setting manual X-Axis	±5° (±9%)	
Y-Axis	±5° (±9%)	
Automatic TILT function	yes	
Working range remote control	IR 100 m	
Remote control function (on/off)	yes	
Rotating speed rpm	300, 800	
Operating time	24 h NiMH	
Temperature range	-20° to +50°C	
Dust / water protection	IP 54	



» Container with FLG 245HV-GREEN



SUPPLIED WITH
FLG 245HV-GREEN (LC 2) + FR 45

ART.-NO. 244501

- Receiver FR 45 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent charger
- Battery case for alkaline batteries
- Adjustable wall and ceiling mount
- Laser glasses
- Magnetic target
- Container

FLG 245HV-GREEN (LC 2)
WITHOUT RECEIVER

ART.-NO. 244551

- Remote control
- Rechargeable battery (NiMH)
- Intelligent charger
- Battery case for alkaline batteries
- Adjustable wall and ceiling mount
- Laser glasses
- Magnetic target
- Container

SUPPLIED WITH
FL 245HV-GREEN (LC 2) + FR-DIST 30

ART.-NO. 244531

- Receiver FR-DIST 30 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent charger
- Battery case for alkaline batteries
- Adjustable wall and ceiling mount
- Laser glasses
- Magnetic target
- Container

ROTATING LASER

INTERIOR

FLG 245HV-GREEN TRACKING

The indoor alignment pro

» **The ultimate solution for easy axis alignment combined with perfect laser line visibility.**

- Green laser for enhanced visibility
- PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser

» **TRACKING function: The laser plane is automatically centred to the receiver «on-grade».**

- Makes alignment jobs over long distances amazingly simple
- Easy one-button-operation of TRACKING function with 60 m working range
- mm-indicating receiver FR 77-MM TRACKING - the visible accuracy

» **User-friendly operating concept**

- Control functions on the instrument: on/off laser beam and remote control
- Additional functions including scanning and slope setting are accessed from remote control
- TRACKING function operated by receiver

» **Highlights**

- TRACKING function
- Indoor use: Outstanding line visibility without using a receiver. Versatile with rotating, scanning and point functions
- Outdoor use: IP 54 protection, long working range, TILT-Function,
- Numerous accessories supplied as standard - check them out



● green laser

TECHNICAL DATA	FLG 245HV-GREEN TRACKING
Self-levelling	horizontal/vertical
Grade	manual
Self-levelling range	±5°
Laser class	2
Visible laser beam	green
Accuracy horizontal	1,0 mm / 10 m
Accuracy vertical	1,5 mm / 10 m
Working range with FR 77-MM Tracking	1000 m
Rotating w/o receiver / Ø	40 m
Scanning w/o receiver / radius	60 m
Tracking function	yes
Working range tracking function	60 m
Scanning	2 step
Laserdot mode	yes
90° plumb beam up	yes
Slope setting manual X-Axis	±5° (±9%)
Y-Axis	±5° (±9%)
Automatic TILT function	yes
Working range remote control	IR 100 m
Remote control function (on/off)	yes
Rotating speed rpm	300, 800
Operating time	24 h NiMH
Temperature range	-20° to +50°C
Dust / water protection	IP 54

FEATURES

- Working range up to 1000 m diameter
- Dust / water protection IP 54
- Variable scanning and laser point mode
- Permanent 90° plumb beam
- Automatic TILT alarm function
- Auto-shut-off when out of level
- Manual slope setting of X and Y axis
- Remote control function (on/off)
- Floor mount with centring mark for accurate set up
- above a ground point





1 Case with FLG 245HV-GREEN Tracking

SUPPLIED WITH FLG 245HV-GREEN TRACKING

ART.-NO. 244701

- Receiver FR 77-MM Tracking with clamp for levelling staff
- Remote control
- Rechargeable batteries
- Charger
- Battery case for alkaline batteries
- Wall mount
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case



2 Receiver FR 77-MM Tracking

ROTATING LASER FOR INTERIOR AND EXTERIOR CONSTRUCTION

Our allrounders – usable both interior and exterior with functions and accessories like (depending on model):

- Well visible red laser diode, some lasers with Power-Switch Technology for best visibility and large range
- Scanning and point function
- Remote control
- Remote control function can be switched off to prevent other remotes controlling the laser
- Manual sloping in both axes
- Rich accessories like receiver, remote control, battery and charger, wall and floor mount, target plate and laser glasses

Areas of application:

- Interior construction
- Civil construction
- Ground movement
- Floor screeding
- Landscaping
- etc.

FL 190A Instantly self-levelling

- » Rotating laser FL 190A is ideally suited for excavation and transferring levels. Whether you are screeding, excavation or aligning a wall, ... the instant self-levelling and extended range ensure fast and precise results.



TECHNICAL DATA	FL 190A
Self-levelling range	± 3°
Accuracy	± 1,5 mm / 10 m
Working range without receiver Ø	30 m*
Working range with receiver Ø	400 m
Rotating speed (rpm)	200, 400, 600
Power supply	NiMH
Operating time	12 h
Dust / water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	1,5 kg

* depending on the room illumination

FEATURES
· Instant self-levelling
· Horizontal self-levelling rotating laser; vertical levelling with one footscrew
· Automatic shut-off and audible alarm when out of self-levelling range
· Variable rotating speed
· Permanent 90° beam to zenith
· Rechargeable NiMH batteries with intelligent charger
· Integrated floor / wall mount with adjustment screw



SUPPLIED WITH
FL 190A (LC 2)

ART.-NO. 292190

- Receiver FR 45 with clamp for levelling staff
- NiMH batteries
- Charger
- Carrying case

SUPPLIED WITH
FL 190A (LC 2)

ART.-NO. 292193

- Receiver FR-DIST 30 with clamp for levelling staff
- NiMH batteries
- Charger
- Carrying case

FL 220HV

Straight to the point - no nonsense

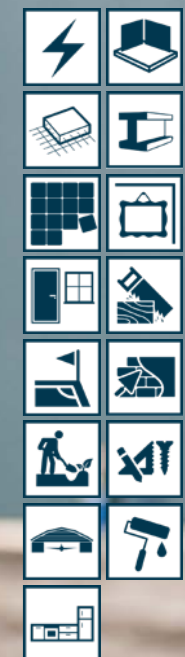
- » **Fully automatic self-levelling horizontal and vertical laser**
 - A multipurpose rotating laser for indoor and outdoor applications
 - 3 buttons for user-friendly functionality
- » **Just switch on and start.**



TECHNICAL DATA	FL 220HV
Self-levelling	horizontal/vertical
Self-levelling range	±5°
Laser class	2
Visible laser beam	red
Accuracy horizontal	1,0 mm / 10 m
Accuracy vertical	1,5 mm / 10 m
Working range with receiver FR 45 Ø	400 m
90° plumb beam up	yes
Automatic TILT function	yes
Manual mode	yes
Rotating speed rpm	600
Battery / Operating time	NiMH / 20 h
Temperature range	-20° to +50°C
Protection class	IP 54

FEATURES
· Working range up to 400 m diameter
· Dust / water protection IP 54
· Permanent 90° plumb beam
· Automatic TILT alarm function
· Auto-shut-off when out of level
· Manual mode

SUPPLIED WITH
ART.-NO. 220000
· Receiver FR 45 with clamp
· Rechargeable battery (NiMH)
· Intelligent battery charger
· Battery case for alkaline batteries
· Carrying case



ROTATING LASER
INTERIOR & EXTERIOR

FL 245HV +

A professional multipurpose laser for indoor and outdoor applications



- » **The latest development in our 245 Series**
- PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser
 - Long distance working range outdoors and outstanding line visibility for indoor applications
 - IP 65 Class protection for all-weather conditions
 - Now includes a floor mount for easy axis alignment in vertical/laydown mode

- » **User-friendly operating concept**
- For the ultimate in ease-of-use the only control functions on the instrument power on/off the laser beam and the remote control
 - All additional functions including scanning and slope setting are accessed from the remote control

- » **Highlights**
- Indoor use: Outstanding line visibility without using a receiver.
 - Versatile with rotating, scanning and point functions
 - Outdoor use: IP 65 protection, long working range, TILT-Function,
 - Numerous accessories supplied as standard - check them out

TECHNICAL DATA	FL 245HV +	FEATURES
Self-levelling	horizontal/vertical	<ul style="list-style-type: none"> · Working range up to 1200 m diameter (depending on receiver) · Dust / water protection IP 65 · Variable scanning and laser point mode · Permanent 90° plumb beam · Automatic TILT alarm function · Auto-shut-off when out of level · Manual slope setting of X and Y axis · Remote control function (on/off)
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	red	
Accuracy horizontal	0,75 mm / 10 m	
Accuracy vertical	1,0 m / 10 m	
Working range with receiver Ø		
with FR 45	1200 m	
with FR-DIST 30	600 m	
with FR 77-MM	600 m	
without receiver	60 m	
Scanning w/o receiver / radius	60 m	
Scanning mode	2 step	
Laser point mode	yes	
90° plumb beam up	yes	
Slope setting X-Axis manual	±5° (±9%)	
Y-Axis manual	±5° (±9%)	
Axis direction vertical	yes	
Automatic TILT function	yes	
Working range remote control	IR 100 m	
Remote control function (on/off)	yes	
Rotating speed rpm	300, 800	
Battery / Operating time	NiMH / 26 h	
Temperature range	-20° to +50°C	
Dust / water protection	IP 65	



» Container with FLG 245HV-GREEN



SUPPLIED WITH
FL 245HV + (LC 2) + FR 45

ART.-NO. 244045

- Receiver FR 45 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent battery charger
- Wall mount
- Floor mount
- Battery case for alkaline batteries
- Laser glasses
- Magnetic target
- Carrying case



SUPPLIED WITH
FL 245HV + (LC 2) + FR-DIST 30

ART.-NO. 244050

- Receiver FR-DIST 30 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent battery charger
- Wall mount
- Floor mount
- Battery case for alkaline batteries
- Laser glasses
- Magnetic target
- Carrying case



SUPPLIED WITH
FL 245HV + (LC 2) + FR 77-MM

ART.-NO. 244077

- Receiver FR 77-MM with clamp
- Remote control
- Rechargeable battery (NiMH)
- Charger
- Wall mount
- Floor support
- Battery case for alkaline batteries
- Laser glasses
- Magnetic target
- Carrying case



ROTATING LASER FOR EXTERIOR CONSTRUCTION

These lasers are specially tailored for outdoor use:

- very robust and well-protected against dust and rain
- horizontal laser, 1 grad and dual grad laser
- PowerSwitch Technology for great range
- High accuracy
- Millimeter-indicating receiver
- Measuring safety functions like TILT and VWS
- Zonal control / masking function to shut off areas of the circle
- TRACKING function for easiest alignment at the scaffold
- Rich accessories like receiver, remote control, battery and charger, telescopic viewfinder and vertical mount

Areas of application:

- Civil construction
- Ground movement
- Road construction
- Machine control
- Landscaping and gardening
- etc.

FL 105H Quick and easy to use - now even better

» The latest generation construction laser for horizontal applications

- New innovative low friction drive mechanism and self-levelling module
- Accurate, robust and temperature stable
 - Low friction drive for reduced noise generation
 - Increased battery life



TECHNICAL DATA	FL 105H
Self-levelling	horizontal
Self-levelling range	±5°
Laser class	2
Visible laser beam	red
Accuracy horizontal	1,0 mm / 10 m
Working range with receiver Ø	
with FR 45	600 m
with FR 77-MM	300 m
Automatic TILT function	yes
VWS function	yes
Rotating speed rpm	800
Operating time	36 h NiMH
Temperature range	-20° to +50°C
Dust / water protection	IP 65

FEATURES
Self-levelling horizontal rotating laser
· 3 buttons for user-friendly functionality
· Working range 600 m diameter
· Dust / water protection IP 65
· Automatic TILT alarm function
· VWS function (Vibration-Wind-Security)
· Auto-shut-off when out of level



SUPPLIED WITH FL 105H (LC 2) + FR 45	SUPPLIED WITH FL 105H (LC 2) + FR 77-MM	SUPPLIED WITH FL 105H (LC 2) + FR-DIST 30
ART.-NO. 212001	ART.-NO. 212078	ART.-NO. 212031
<ul style="list-style-type: none"> · Receiver FR 45 with clamp for levelling staff · Rechargeable battery and charger · Battery compartment for alkaline batteries · Container 	<ul style="list-style-type: none"> · Receiver FR 77-MM with clamp for levelling staff · Rechargeable battery and charger · Battery compartment for alkaline batteries · Container 	<ul style="list-style-type: none"> · Receiver FR-DIST 30 with clamp for levelling staff · Rechargeable battery and charger · Battery compartment for alkaline batteries · Container
SET FL 105H (LC 2) WITH FR 45 + FS 20 + TN 15	SET FL 105H (LC 2) WITH FR 77-MM + FS 20 + TN 15	
ART.-NO. 212001-S02	ART.-NO. 212078-S01	



FL 115H

The new standard for horizontal laser levels

» The latest generation premium laser for horizontal applications

- New innovative low friction drive mechanism and self-levelling module
- Accurate, robust and temperature stable
- Low friction drive for reduced noise generation

» Improved performance

- Extra long working range
- Rotating speed 800 rpm for optimal usage with machine control receivers
- Increased accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
- Robust remote control with 100 m range

TECHNICAL DATA	FL 115H
Self-levelling	horizontal
Grade	manual
Self-levelling range	$\pm 5^\circ$
Laser class	2
Visible laser beam	red
Accuracy horizontal	$0,5 \text{ mm} / 10 \text{ m}$
Working range with receiver \varnothing	
· with FR 45	1200 m
· with FR 77-MM	900 m
· with FMR 706-M/C	900 m
Slope setting manual X-Axis	$\pm 5^\circ (\pm 9\%)$
Slope setting manual Y-Axis	$\pm 5^\circ (\pm 9\%)$
Automatic TILT function	yes
VWS function	yes
Masking (beam screen)	yes
Working range remote control	IR 100 m
Rotating speed rpm	800
Operating time	
Temperature range	$-20^\circ \text{ to } +50^\circ \text{C}$
Dust / water protection	IP 66

FEATURES
Premium self-levelling horizontal rotating laser
· Easy and intuitive to use
· Robust rubberised housing with metal cover
· Working range 1200 m diameter
· Dust / water protection IP 66
· High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
· Automatic TILT alarm function
· VWS function (Vibration-Wind-Security)
· Auto-shut-off when out of level
· Electronic beam screen
· Manual slope setting of X and Y axis
· Li-Ion battery technology

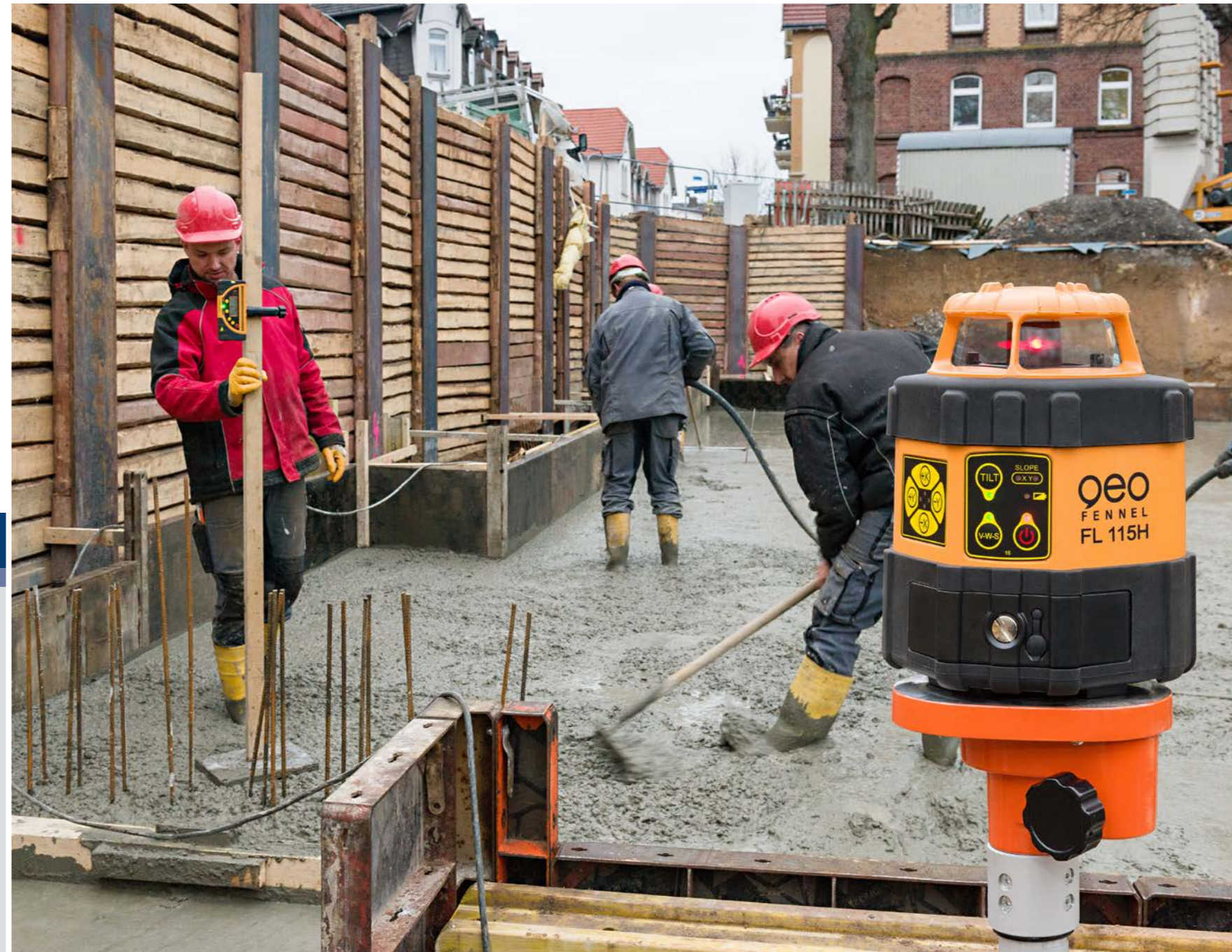
SUPPLIED WITH
FL 115H (LC 2) + FR 45
ART-NO. 211001
· Receiver FR 45 with clamp
· Li-Ion rechargeable battery with charger
· Battery case for alkaline batteries
· Container



SUPPLIED WITH
FL 115H (LC 2) + FR 77-MM
ART-NO. 211078
· Receiver FR 77-MM with clamp
· Li-Ion rechargeable battery with charger
· Battery case for alkaline batteries
· Container



SUPPLIED WITH
FL 115H (LC 2) + FR-DIST 30
ART-NO. 211031
· Receiver FR-DIST 30 with clamp
· Li-Ion rechargeable battery with charger
· Battery case for alkaline batteries
· Container



SET
FL 115H (LC 2) MIT FR 45 + FS 20 + TN 15
ART-NO. 211001-S02

SET
FL 115H (LC 2) + FR 77-MM + FS 20 + TN 15
ART-NO. 211078-S01

FL 155H-G

Dual grade laser for beginners

ROTATING LASER

EXTERIOR



- » **The latest innovation in our Dual Grade range**
 - PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser
 - Robust rubberised housing for on-site protection
 - Zonal control (electronic beam screen) eliminates interference from other lasers

- » **High performance**
 - High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
 - Grade setting of X and Y axis up to $\pm 10\%$ (monitored)
 - TILT and VWS-Function
 - Li-Ion battery technology
 - 2-Way RF remote control

- » **Easy operation**
 - Digital setting of grade values
 - Monitored grade
 - Reduced number of buttons for ease-of-use



TECHNICAL DATA	FL 155H-G	FEATURES
Self-levelling range	$\pm 6^\circ$	<ul style="list-style-type: none"> · Horizontal Dual Grade Laser · Digital grade adjustment · Monitored grade · Automatic TILT function · VWS function combined with TILT function · Illuminated display · Zonal control (masking) · Zonal control (electronic beam screen) · Remote control screen · Li-Ion battery technology · Battery charger includes adapter for in-car charging
Laser class	2	
Accuracy	$\pm 0.5\text{mm} / 10\text{m}$	
Working range with receiver (Ø)		
with FR 45	1200 m	
with FR 77-MM	600 m	
Horizontal slope setting		
X-Axis	$\pm 10.000\%$	
Y-Axis	$\pm 10.000\%$	
X and Y-Axis	$\Sigma \pm 14 \%$	
Rotating speed	600 rpm	
Operating time	30 h	
Power supply	Li-Ion	
RF Remote control range	80 m	
Temperature range	-20°C to +50°C	
Dust / water protection	IP 65	
Weight (instrument only)	2.2 kg	



SUPPLIED WITH FL 155H-G + FR 45	SUPPLIED WITH FL 155H-G + FR 77-MM
ART-NO. 213145	ART-NO. 213177
<ul style="list-style-type: none"> · Receiver FR 45 with clamp · 2-Way RF Remote control · Li-Ion battery · Intelligent battery charger · Battery case for alkaline batteries · Carrying case 	<ul style="list-style-type: none"> · Receiver FR 77-MM with clamp · 2-Way RF Remote control · Li-Ion battery · Intelligent battery charger · Battery case for alkaline batteries · Carrying case

ROTATING LASER

EXTERIOR

FL 275HV-TRACKING

The alignment pro

- » **The latest generation of precise tracking lasers**
 - New innovative low friction drive mechanism and self-levelling module
 - Accurate, robust and temperature stable
 - Low friction drive for reduced noise generation
- » **User-friendly operating concept**
 - For the ultimate in ease-of-use the only keypad functions on the instrument control power On / Off, VWS, slope selection and the remote control
 - All additional functions including scanning and slope setting are accessed from the remote control
 - TRACKING function at the receiver
- » **Improved performance**
 - Robust remote control with 100 m range

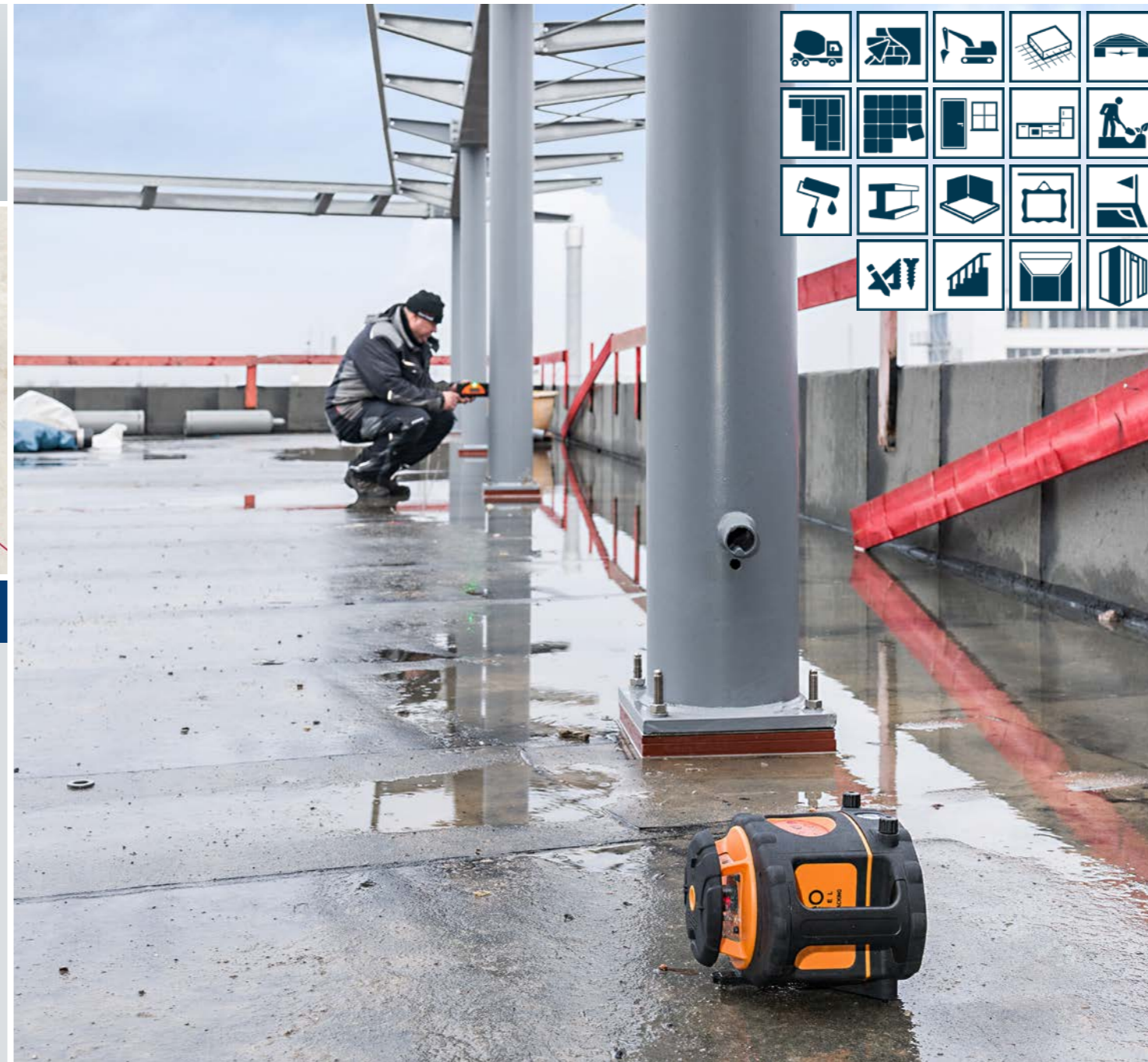


Receiver FR 77-MM TRACKING 1



FEATURES

- TRACKING function for automatic axis alignment horizontal and vertical
- The laser plane is automatically centred to the receiver "on-grade"
- Easy one-button operation of TRACKING function
- Working range of TRACKING function 110 m
- mm-indicating Receiver FR 77-MM TRACKING
- Vertical: in both X and Y axis
- Horizontal: one axis X or Y, opposite axis self-levelled
- Dust / water protection IP 66
- High accuracy of ± 0,5 mm / 10 m
- Working range 400 m diameter
- Enhanced scanning functions with small increments and a range up to 180°
- Permanent 90° beam for right angles
- Automatic TILT alarm function
- VWS function (Vibration-Wind-Security)
- Auto-shut-off when out of level
- Remote control function on/off: to avoid interference with other remote controls or mobile devices
- Manual slope setting of X and Y axis or auto self-level of opposite axis
- Floor mount with centring mark for accurate set up above a ground point
- Li-Ion battery technology



TECHNICAL DATA

	FL 275HV TRACKING
Self-levelling	horizontal/vertical
Grade	manual
Self-levelling range	±5°
Laser class	2
Visible laser beam	red
Accuracy horizontal	0,5 mm / 10 m
Accuracy vertical	1,0 mm / 10 m
Working range with receiver Ø	400 m
*with FR 77-MM TRACKING	
Rotating w/o receiver / Ø	40 m
Scanning w/o receiver / radius	40 m
Tracking function	yes
Working range tracking function	110 m
Scanning	4 step
Laserdot mode	yes
90° plumb beam up	yes
Slope setting manual X-Axis	±5° (±9%)
Y-Axis	±5° (±9%)
Auto self-level of opposite axis	yes
Automatic TILT function	yes
VWS-Function	yes
Working range remote control	IR 100 m
Remote control function (on/off)	yes
Rotating speed rpm	300, 800
Operating time	50 h Li-Ion
Temperature range	-20° to +50°C
Dust / water protection	IP 66

SUPPLIED WITH

FL 275HV TRACKING + FR 77-MM TRACKING

ART-NO. 242701

- Receiver FR 77-MM TRACKING with clamp for levelling staff
- Remote control
- Rechargeable batteries
- Charger
- Battery case for alkaline batteries
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case



FL 300HV-G EasyGRADE

The easiest grade laser

» Many users find dual-axis grade lasers too complicated, expensive or overloaded with features. The FL 300HV-G EasyGRADE brings a new meaning to user friendly and ease-of-use!

- Simply press the „%“ buttons on the keypad to set the desired grade of X-axis - it's as easy as that.
- Ideal for setting-out gradients for surface drainage, paving, landscaping etc.
- The range from 0.1% to 6.9% covers the majority of on-site tasks

» 2nd axis (Y)

- Horizontal: Self-levelling -or- manual grade setting with remote control
- Vertical: axis direction with remote control

» Highlights

- Easy single grade setting, long working range, TILT/VWS-Measuring security functions
- PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser
- IP 66, high accuracy, robustness, Li-Ion battery



FEATURES	
HORIZONTAL	<ul style="list-style-type: none"> · Self-levelling · Numerical grade setting in X-Axis · Manual grade setting in Y-Axis with remote control
VERTICAL	<ul style="list-style-type: none"> · Self-levelling · Axis direction in Y-Axis with remote control
	<ul style="list-style-type: none"> · TILT function · VWS function (Vibration-Wind-Security) · 90° beam to zenith · Dust / water protection IP 66



TECHNICAL DATA	
Self-levelling range	±5°
Laser class	2
Visible laser beam	rED
Horizontal accuracy	± 0.75 mm / 10 m
Vertical accuracy	± 1 mm / 10 m
Working range with receiver (diameter)	
with FR 45	1200 m
with FR-DIST 30	600 m
with FR 77-MM	600 m
90° plumb beam up	yes
Slope setting / axis direction	
HORIZONTAL	
Grade setting in X-Axis	+ 0.1 to 6.9% (at 0.1% step)
Y-Axis self-levelled -or- manual grade setting	±5° (±9%)
VERTICAL	
Vertical axis direction	±5°
2nd axis self-levelled	
Automatic TILT function	yes
VWS	yes
Remote control working range	IR 100 m
Rotating speed	800 rpm
Operating time	40 h Li-Ion
Temperature range	-10° to +50°
Dust / water protection	IP 66

SUPPLIED WITH FL 300HV-G EASYGRADE + FR 45	SUPPLIED WITH FL 300HV-G EASYGRADE + FR-DIST 30	SUPPLIED WITH FL 300HV-G EASYGRADE + FR 77-MM
ART.-NO. 214045	ART.-NO. 214050	ART.-NO. 214077
<ul style="list-style-type: none"> · Receiver FR 45 with clamp · Remote control · Rechargeable battery (Li-Ion) · Intelligent battery charger · Battery case for alkaline batteries · Floor mount (integrated) · Carrying case 	<ul style="list-style-type: none"> · Receiver FR-DIST 30 with clamp · Remote control · Rechargeable battery (Li-Ion) · Intelligent battery charger · Battery case for alkaline batteries · Floor / wall mount (integrated) · Carrying case 	<ul style="list-style-type: none"> · Receiver FR 77-MM with clamp · Remote control · Rechargeable battery (Li-Ion) · Intelligent battery charger · Battery case for alkaline batteries · Floor / wall mount (integrated) · Carrying case · Floor/wall mount (integrated) · Carrying case

FL 505HV-G

The versatile dual grade laser

- » Improved performance utilising PowerSwitch-Technology:
The power of a class 3R in a class 2 laser.
- » 4 mm laser beam diameter for optimised compatibility with our FMR 700/800 over long distances
- » Now with receiver FR 77-MM with mm-indication as standard
- » Fully automatic self-levelling in horizontal, vertical and grade
- » Slope functions horizontal:
 - Digital grade setting of X and Y axis up to $\pm 10\%$
 - Manual slope setting of X and Y axis
- » Slope functions vertical:
 - Direction of X axis can be set up to $\pm 10\%$ with Y axis self-levelled
 - Direction of X and Z axis can be set manually
- » Automatic TILT function
- » VWS function (Vibration-Wind-Security)
 - Rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- » Fully functional 9-channel 2-way RF remote control
- » Li-Ion battery technology



With 360° horizontal fine adjustment bracket

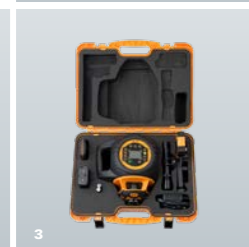
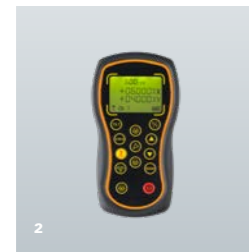
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With 9-channel 2-way RF remote control

2

Complete kit supplied in container

3



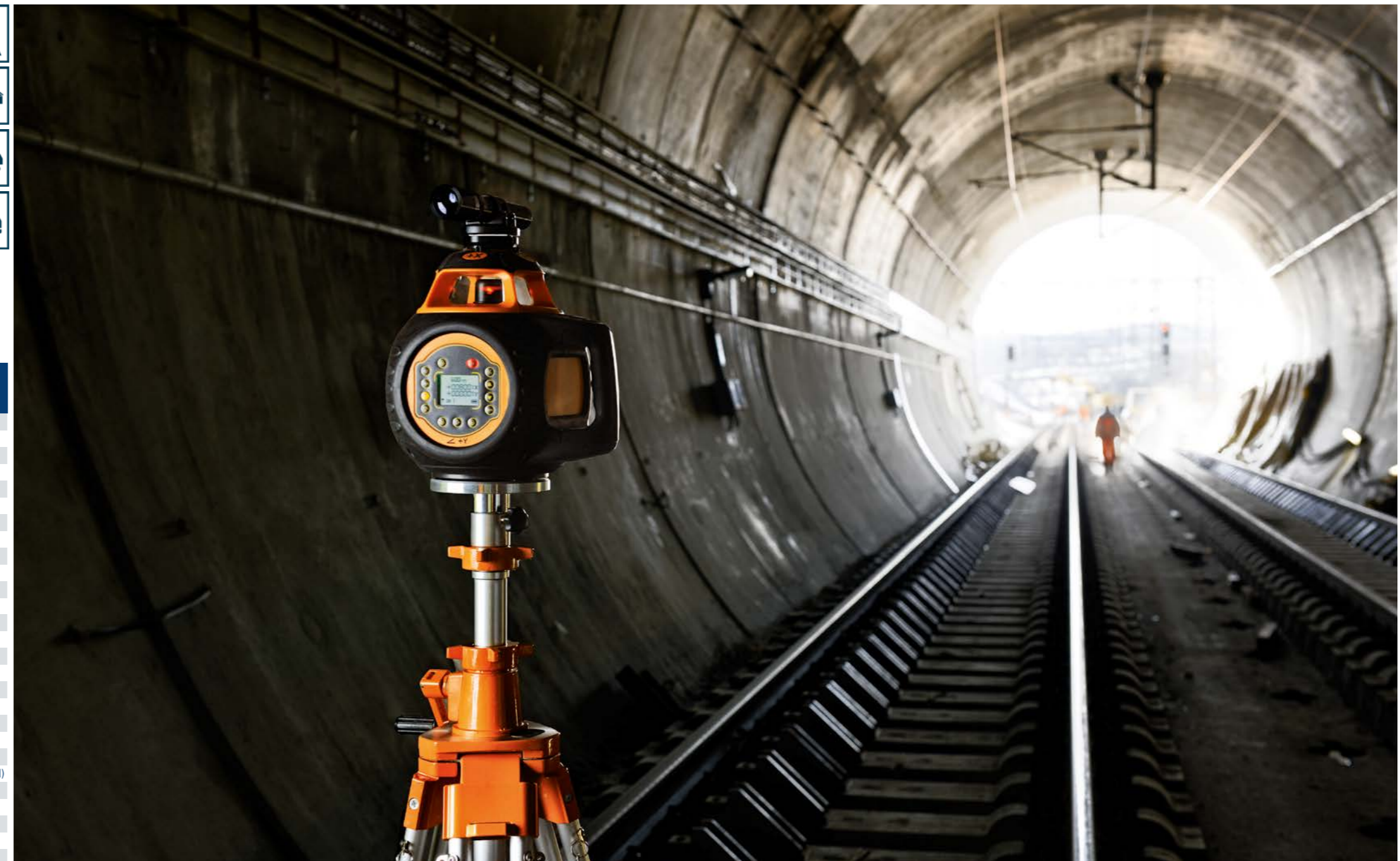
SUPPLIED WITH FL 505HV-G (LC 2) + FR 77-MM
ART-NO. 231025
<ul style="list-style-type: none"> • Receiver FR 77-MM with clamp with clamp • 2-Way RF Remote control • Li-Ion battery & charger • Vertical mount • Telescope • 360° horizontal fine adjustment bracket • Container

SUPPLIED WITH FL 505HV-G (LC 2) + FR-DIST 30
ART-NO. 231055
<ul style="list-style-type: none"> • Receiver FR 77-DIST 30 with clamp • 2-Way RF Remote control • Li-Ion battery & charger • Vertical mount • Telescope • 360° horizontal fine adjustment bracket • Container

FEATURES
<ul style="list-style-type: none"> • Dual Axis Laser • Horizontal and vertical • Digital grade adjustment • Monitored grade • TILT function • VWS function • 90° beam to zenith • Illuminated display • 2 way RF remote control • Manual function • 4-step scanning function • Operation with rechargeable Li-Ion or alkaline batteries • Dust / water protection IP 66

TECHNICAL DATA	FL 505HV-G
Self-levelling range	$\pm 8^\circ$
Accuracy horizontal	$\pm 0.5 \text{ mm} / 10 \text{ m}$
Accuracy vertical	$\pm 1 \text{ mm} / 10 \text{ m}$
Working range with receiver \varnothing FR 45	1200 m
receiver \varnothing FR 77-MM	400 m
Scanning w/o receiver	60 m*
Rotating w/o receiver \varnothing	60 m*
Laser diode / Laser class	2
Scanning ranges	$0^\circ, 10^\circ, 45^\circ, 90^\circ, 180^\circ$
Horizontal slope setting	
X axis	$\pm 10.000\%$
Y axis	$\pm 10.000\%$
X and Y axis	$\Sigma \pm 14\%$
Vertical slope setting	
X axis	$\pm 10.000\%$
(Y/Z) axis	horizontal self-levelled
Rotating speed	300 / 600 / 1100 rpm
Operating time	40 h
Power supply	intelligent / Li-Ion Alkaline batteries (optional)
Remote control range	150 m
Remote control channels	9
Temperature range	-10°C to $+50^\circ\text{C}$
Dust / water protection	IP 66
Weight (instrument only)	3.85 kg

* depending on environmental conditions



FL 510HV-G TRACKING M

The ideal outdoor laser

- » **Improved performance utilising PowerSwitch-Technology: The power of a class 3R in a class 2 laser.**
- » **4 mm laser beam diameter for optimized compatibility at use with FMR 700 / 800 at long distance.**
- » **Including receiver FR 77-MM TRACKING with mm-indication.**

INCLUSIVE	
With Receiver FR 77-MM TRACKING	1
Remote Control	2
Complete kit supplied in container	3

OPTIONAL	
Receiver FR 45	4
Receiver FR 77-MM	5
Receiver FR-DIST 30	6

TECHNICAL DATA	FL 510HV-G TRACKING	FEATURES	SUPPLIED WITH FL 510HV-G TRACKING M
Self-levelling range	± 8°	<ul style="list-style-type: none"> · Dual Axis Laser · Horizontal and vertical · Digital grade adjustment · Monitored grade (also in tracking mode) · TILT function · VWS function · Tracking function horizontal and vertical · Zonal control · 90° beam to zenith · Illuminated display · 2-way RF remote control · Manual function · Operation with rechargeable Li-Ion or alkaline batteries · Dust / water protection IP 66 	ART-NO. 252000
Accuracy horizontal	± 0.5 mm / 10 m		· Receiver FR 45
Accuracy vertical	± 1 mm / 10 m		ART-NO. 257100
Working range with receiver FR 77-MM TRACKING Ø	400 m*		· Receiver FR 77-MM
Laser diode / Laser class	2		ART-NO. 257300
Horizontal slope setting			· Receiver FR-DIST 30
X-axis	± 10.000 %		ART-NO. 231700
Y-axis	± 10.000 %		· Receiver FR 77-MM TRACKING with clamps for levelling staff and scaffold
X and Y axis	Σ ± 14 %		· Rechargeable batteries and charger
Vertical slope setting			· 2-way RF remote control
X axis	± 10.000 %		· Li-Ion batteries and charger
Y(Z) axis	horizontal self-levelled		· Vertical mount
Working range tracking function	140 m*		· Telescopic viewfinder
Rotating speed	300 / 600 / 1100 rpm		· Container
Operating time	40 h		
Power supply	intelligent / Li-Ion		
Alkaline batteries (optional)			
Remote control range	100 m		
Remote control channels	8		
Temperature range	-10 °C – +50 °C		
Dust / water protection	IP 66		
Weight (instrument only)	3.85 kg		
	* depending on environmental conditions		



- » **Tracking functions:**
 - The laser plane is automatically centred to the receiver "on-grade"
 - Vertical: in both X and Y axis
 - Horizontal: one axis X or Y, other axis horizontal self-levelled
 - For highest demands: exact monitoring of the tracked axis by continuous radio link between rotating laser and receiver. This application requires the use of a 2nd receiver for height checking work. Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections - increases site safety indication of grade value in % after completion of tracking process shown on the instrument and remote control display.
- » **Slope functions:**
 - **Horizontal:**
 - Digital grade setting of X and Y axis up to ±10 %
 - Manual slope setting of X and Y axis
 - **Vertical:**
 - Direction of X axis can be set up to ±10 % with Y axis self-levelled
 - Direction of X and Z axis can be set manually
- » Last tracked or keyed in grade value is retained after switching off and is retrievable from the memory (both X and Y axis).
- » Automatic TILT function
- » VWS function (Vibration-Wind-Security)
- » Rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- » Zonal control with electronic beam screen (masking)
- » Fully functional 8-channel 2-way RF remote control
- » Li-Ion battery technology



ROTATING LASER EXTERIOR

ROTATING LASER EXTERIOR

Rotating Lasers Outline

ART.-NO.	INTERIOR			INTERIOR & EXTERIOR		
	horizontal / vertical			horizontal / vertical		
	FLG 190A GREEN	FLG 245HV-GREEN	FLG 245HV-GREEN TRACKING	FL 190A	FL 220HV	FL 245HV +
	292195	244501	244701	292190	220000	244045
						
Laser class	2	2	2	2	2	2
Horizontal levelling	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic
Vertical levelling	manual	fully automatic	fully automatic	manual	fully automatic	fully automatic
Accuracy / 10 m	H ± 1,5 mm	H ± 1,0 mm	± 1,0 mm	± 1,5 mm	H ± 1,0 mm	H ± 0,75 mm
Dust / water protection	IP 54	IP 54	IP 54	IP 54	IP 54	IP 65
Working range w/o receiver Ø	40 m	60 m	60 m	30 m	30 m	60 m
Working range with receiver FR 45 Ø	600 m	1000 m	-	400 m	400 m	1200 m
Working range with receiver FR 77-MM Ø	-	-	1000 m	-	-	600 m
rpm	200, 400, 600	300, 600	300, 800	200, 400, 600	600	300, 800
Tracking function	-	-	yes	-	-	-
TILT function	-	yes	yes	-	yes	yes
VWS function	-	-	-	-	-	-
Slope function of both axis X and Y	-	± 5° (9 %)	± 5° (9 %)	-	-	± 5° (9 %)
Slope setting	-	manual	manual	-	-	manual
Plumb up / down beam	yes	yes	yes	yes	yes	yes
Power supply	NiMH	NiMH	NiMH	NiMH	NiMH	NiMH
Receiver, remote control, rechargeable battery, charger	inclusive, without remote	inclusive	inclusive	inclusive, without remote	inclusive, without remote	inclusive
Page	36	38	40	42	44	46

ART.-NO.	EXTERIOR						ART.-NO.
	horizontal			horizontal / vertical			
	FL 105H	FL 115H	FL 155H-G	FL 275HV-TRACKING	FL 300HV-G EASYGRADE	FL 505HV-G	
	212001	211001	213145	242701	214045	231025	231700
							
Laser class	2	2	2	2	2	2	2
Horizontal levelling	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic
Vertical levelling	-	-	-	fully automatic	fully automatic	fully automatic	fully automatic
Accuracy / 10 m	H ± 1,0 mm	H ± 0,5 mm	H ± 0,5 mm	± 0,5 mm	± 0,5 mm	H ± 0,5 mm	H ± 0,5 mm
Dust / water protection	IP 65	IP 66	IP 65	IP 66	IP 65	IP 66	IP 66
Working range w/o receiver Ø	40 m	60 m	-	40 m	-	40 m	40 m
Working range with receiver FR 45 Ø	600 m	1200 m	1200 m	-	1200 m	-	40 m
Working range with receiver FR 77-MM Ø	300 m	900 m	600 m	400 m	600 m	400 m	400 m
rpm	800	800	500, 800	300, 800	800	300,600,1100	300,600,1100
Tracking function	-	-	-	yes	-	-	yes
TILT function	yes	yes	yes	yes	yes	yes	yes
VWS function	-	yes	yes	yes	yes	yes	yes
Slope function of both axis X and Y	-	± 5° (9 %)	± 6° (10 %)	± 5° (9 %)	+ 6.9 % (X)	± 10 %	± 10 %
Slope setting	-	manual	digital / controlled	manual	numeric / controlled	digital / controlled	digital / controlled
Plumb up / down beam	-	-	-	yes	yes	yes	yes
Power supply	NiMH	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion
Receiver, remote control, rechargeable battery, charger	inclusive, without remote	inclusive	inclusive	inclusive	inclusive	inclusive	inclusive
Page	48	50	52	54	56	58	60

PIPE LASER

ROBUST, WATER RESISTANT,
POWERFUL.

Our new generation of pipe lasers incorporate the latest technology for improved site performance.



FKL 44 & FR-FKL TRACKING

The handy one

- » FKL 44 Pipe laser for tube diameters of 100 - 300 mm.
- » Handy and robust all-metall housing pipe laser for drainage work and piping in house and object construction, etc.
- »
 - OLED-Display with large figures
 - RF-Remote control with 100 m working range
 - Laser spot direction setting: Quick shifting by continued pressing respective button at both laser or remote control
 - Rugged, waterproof, powerful
 - Easy and logic operation
 - Comprehensive range of standard accessories
- » **Receiver FR-FKL TRACKING (optional)**
Tracking function for automatic detection of the horizontal target plate center. Saves time at next day set up.



TECHNICAL DATA	FKL 44 (LC 2)	FEATURES	SUPPLIED WITH FKL 44 (LC 2)
Laser class	2	<ul style="list-style-type: none"> · Robust aluminium housing · Easy intuitive operation · Fully automatic self-levelling · Automatic beam centering · Laser start point indication · Clear easy-to-read OLED-Display · RF Remote control with long working range 	ART.-NO. 454000
Laser diode	red		<ul style="list-style-type: none"> · Target frame with targets DN 100 / 125 / 150 / 200 / 250 / 300 · Special target for DN 100 pipes (also target frame for FR-FKL TRACKING) · RF-Remote control · Leg sets DN 125 / 150 / 200 / 250 / 300 · Li-Ion battery and charger
Beam diameter	10 mm		
Working range	120 m		
Grade range	-20% to +30%		
Self-levelling range	± 5°		
Minimum display reading	0,000 %		
Horizontal accuracy	± 5 mm / 100 m		
Left / right tracking	± 10°		
Operating time	24 h		
Power supply	8000 mAh Li-Ion		
RF-Remote control range	front / back 100 m / 50 m		
Temperature range	-20°C to +50°C		
Dust / water protection	IP 68		
Dimensions	Ø 96 mm, L = 332 mm		
Weight (laser only)	2,8 kg		
TECHNICAL DATA	RECEIVER FR-FKL TRACKING	WITH FR-FKL TRACKING	
Accuracy	± 2 mm / 100 m	<ul style="list-style-type: none"> · Tracking function for automatic detection of the horizontal target plate center. 	
Working range	50 m		
Power supply	2 x AAA batteries		
Temperature range	-10°C to +45°C		
Dust / water protection	IP 67		

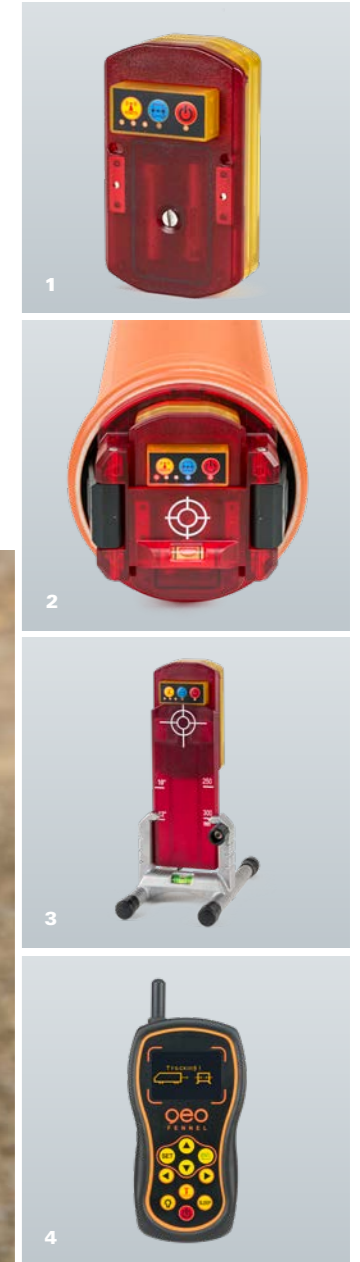
SUPPLIED WITH FR-FKL TRACKING
ART.-NO. 454050
<ul style="list-style-type: none"> · FR-FKL Receiver · Batteries



» **SUPPLIED WITH**

- Fitting**
- 1 Target frame with target DN 100-200
 - 2 Container
 - 3 Pipe laser
 - 4 Remote control
 - 5 Feet DN 125-300
 - 6 Special target for DN 100 pipes (also target frame for FR-FKL TRACKING)
 - 7 Target DN 250-300
 - 8 Charging cable
 - 9 Charger

- Optional: Receiver FR-FKL Tracking 1
Special target for DN 100 2
Target plate DN 300 with receiver 3
RF remote control with digital display 4



» FKL 55



» FKL 55-Green



green laser

FKL-55 and FKL-55 GREEN Straight and advanced

» Our new generation of pipe lasers incorporate the latest technology for improved site performance.

- Advanced mechanical engineering technology, temperature stability and grade technology
- Extremely good visibility of OLED-Display with large figures
- Long-range IR remote control with 100 m working range
- Laser spot direction setting: Quick shifting by continued pressing respective button at both laser or remote control

» Rugged, waterproof, powerful, easy-to-use and comprehensive range of standard accessories.

» To the human eye a green laser dot is more visible than a red laser dot. Green laser technology of the next generation: Temperature range was increased to -20 °C.

TECHNICAL DATA	FKL 55 (LC 3R)	FKL 55 (LC 2)	FKL 55-GREEN (LC 3R)
	ART-NO. 455500	ART-NO. 455520	ART-NO. 456500
Laser class	3R	2	3R
Laser diode	green	red	red
Beam diameter	10 mm	10 mm	10 mm
Working range	up to 300 m	up to 120 m	up to 300 m
Grade range	-20 % to +30 %	-20 % to +30 %	-20 % to +30 %
Self-levelling range	± 5°	± 5°	± 5°
Minimum display reading	0,000 %	0,000 %	0,000 %
Horizontal accuracy	± 5 mm / 100 m	± 5 mm / 100 m	± 5 mm / 100 m
Left / right scanning	± 4°	± 4°	± 4°
Operating time	24 h (NiMH)	24 h (NiMH)	24 h (NiMH)
Power supply	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)
IR remote control range			
front / back	100 m / 50 m	100 m / 50 m	100 m / 50 m
Temperature range	-20 °C to +40 °C	-20 °C to +50 °C	-20 °C to +40 °C
Dust / water protection	IP 68	IP 68	IP 68
Dimensions	Ø 132 mm, length 380 mm	Ø 132 mm, L = 380 mm	Ø 132 mm, L = 380 mm
Weight (laser only)	6 kg	6 kg	6 kg



SUPPLIED WITH

Fittings

- 1 Target frame with target DN 150–300
- 2 Container
- 3 Pipe Laser
- 4 IR remote control
- 5 Leg set DN 500
- 6 Leg set DN 400
- 7 Leg set DN 300
- 8 Leg set DN 250
- 9 Leg set DN 200
- 10 Adapter for 3-leg set up
- 11 Charger
- 12 Battery case for alkaline batteries
- 13 Target DN 400–500

Application in pipes DN 150 w/o legs

FEATURES

- Robust aluminium housing
- Easy intuitive operation
- Fully automatic self-levelling
- Automatic beam centering
- Laser start point indication
- Clear easy-to-read OLED-Display
- IR remote control with long working range
- Integrated rechargeable batteries



Universal Mount for FKL-55 / FKL-55 Green



UNIVERSAL MOUNT

ART-NO. 455100

- Levelling base with height adjustable mount for use
- in manhole
- in or in front of pipes with large diameter
- with 5/8" female thread for tripod connection

RECEIVERS

OVERCOME DISTANCES:
WITHOUT LOSING THE DETAIL.

To quickly and easily implement the widest variety of measuring tasks, it is sometimes vital to have the appropriate solution available. Whether you are looking for laser intensive glasses, magnetic targets or the correct adapter – the versatile accessory range from geo-FENNEL makes your work noticeably more efficient.



FR 55-M & FR 55 Receiver for Line Lasers

- » For red and green laser.
- » Height indication by LEDs.

- » Height indication by LEDs and LCD.



FEATURES FR 55-M
ART.-NO. 500520
<ul style="list-style-type: none"> For red and green laser Height indication by 3 LEDs which are situated on the front, side and back With clamp Shut-off tone 2-step accuracy Automatic shut-off Supplied in case Built-in magnet on top

FEATURES FR 55
ART.-NO. 500510
<ul style="list-style-type: none"> For red and green laser Height indication by 3 LEDs which are situated on the front side and top and with a large display on the front With clamp Shut-off tone Automatic shut-off Built-in vials

FR 75-MM Receiver for Line Lasers

- » For red and green laser.
- » With digital level indication in millimeters.
- » Extra long receiving window of 100 mm.
- » mm-indication of difference between laserplane and "0" level.



TECHNICAL DATA	FR 75-MM
2-step accuracy	far & close distance
Accuracy mm-indication	± 1 mm
Length receiving window	100 mm
Length receiving area mm-indication	50 mm
Measuring units	mm
Signal tones	3
Display indication	front & back
LED indication	front, side, back
Power supply / operating time	4 x Alkaline / 55 h
Temperature range	-10°C to +50°C
Display illumination	yes
Magnets	top, side
Vials	top, side
Dust / water protection	IP 65
Dimensions	172 x 78 x 32 mm
Weight	0,5 kg

FEATURES
<ul style="list-style-type: none"> For line lasers using a red or green laser beam Extra long receiving window 100 mm mm-indication of difference between laserplane and "0" level Segments of display indication increase / decrease proportionally Illuminated display Robust clamp
SUPPLIED WITH FR 75-MM
ART.-NO. 257200
<ul style="list-style-type: none"> 4 x AA Alkaline batteries Bracket

FR 45 Receiver for Rotating Lasers

- » For red and green laser.
- » With dual display and clamp for levelling staff, shut-off tone, automatic shut-off, illumination, built-in magnetic strips and vial. Rubberised housing for effective site protection.



TECHNICAL DATA	FR 45
Suitable for laser diode	red
Indication	2 x LCD
3-step accuracy	± 10 mm, ± 4 mm, ± 2 mm
Power supply	1 x 9 V
Signal tones	3
Tone can be switched off	yes
Auto-shut-off	yes
Illumination	yes
Weight	0,2 kg
Dust / water protection	IP 66

FEATURES FR 45
ART.-NO. 252000
<ul style="list-style-type: none"> For red and green laser Height indication by 3 LEDs which are situated on the front side and top and with a large display on the front With clamp Shut-off tone Automatic shut-off Built-in vials



RECEIVERS FOR LASERS

RECEIVERS FOR LASERS

FR 77-MM Receiver for Rotating Lasers

» For red and green laser.

With digital level indication in millimeters.

- Extra long receiving window
- mm-indication of difference between laserplane and "0" level
- "0" position can be defined (Offset)



Illuminated display 1

Detail offset 2



TECHNICAL DATA	FR 77-MM
3-step accuracy	± 2 / 5 / 9 mm
Accuracy mm-indication	± 1 mm
Working range class 2-Laser	150 m*
Working range class 3R-Laser	350 m*
Length receiving window	125 mm
Length receiving area mm-indication	100 mm
Offset range (OSET) from base line	± 20 mm
Measuring units	mm, cm, in, fraction of in
Signal tones	3
Display indication	front, back
LED indication	front, side, back
Power supply / operating time	Alkaline / 110 h
Temperature range	-10 °C to +50 °C
Display illumination	yes
Magnets	top, side
Vials	top, side
Dust / water protection	IP 65
Dimensions	170 x 77 x 32 mm
Weight	0.5 kg

*depending on the laser class

FEATURES
· For rotating lasers using a red and green laser beam
· Extra-long receiving window
· mm-indication of difference between laserplane and "0" level
· Segments of display indication increase / decrease proportionally
· "0"-position can be defined (offset)
· Display illumination
· Robust clamp
· Special mount for various connections e.g. at the scaffold

SUPPLIED WITH FR 77-MM
ART.-NO. 257100
· 4 x AA Alkaline
· Clamp
· Bracket

SUPPLIED WITH FR 77-MM TRACKING
ART.-NO. 257150
· 4 x AA Alkaline
· Clamp
· Bracket

UNIVERSAL ACCESSORIES FOR RED AND GREEN ROTATING LASERS



FR-DIST 30 Receiver for Rotating Laser with integrated Laser Distance Meter

» Innovation: AUTO-DIST function measures the distance between laser plane ("0" level of receiver) and floor, wall, object automatically

Applications

- Makes the levelling staff unnecessary for height control works with a rotating laser
- Quick and contact-free height control
- Easy checking of ditch depth when working with an excavator
- Direct reading of height differences during grading work
- Fast and safe interior alignment when working at fixed distances - eliminates the need for a 2nd person holding the end of a measuring tape



mm indication 1

Measurement of area 2



TECHNICAL DATA	FR-DIST 30	FEATURES
LASER RECEIVER		· Can be used with either red or green beam rotating lasers
Accuracy	± 1 / 5 / 9 mm	
Working range	300 m (radius)	
Temperature range	-10°C to +50°C	· mm-indication of difference between laserplane and "0" level
LASER DISTANCE METER		· Extensive laser distance meter functions
Accuracy	± 2 mm	Measuring functions (LASER DISTANCE METER)
Measuring range	50 m	
Temperature range	0°C to +40°C	
Point of reference	Bottom, on-Level, top	· Single / permanent measurement
Measuring units	m / ft / inch	· Area / volume
Laser class	2	· Pythagoras 1, height (2 points)
GENERAL		· Pythagoras 2, overall height (3 points)
Length of receiving window	100 mm	
Signal tones	yes	
Display indication	front	
LED indication	front / side	
Power supply / operating time	3 x AA Alkaline	
Operating time		
used as laser receiver only	30 h	
used as laser distance meter only	5000 measurements	
Combined	8 h	
Display illumination	yes	
Magnets & Vials	top, side	
Dust / water protection	IP 65	
Dimensions	172 x 80 x 32 mm	
Weight	0,3 kg	

SUPPLIED WITH FR-DIST 30
ART.-NO. 257300
· 3 x AA Alkaline battery
· Clamp for levelling staff



FMR 600 Receiver for Rotating Lasers

» Heavy duty laser receiver, ideal for mounting onto construction machines. Strong built-in magnets for connection to machines and a clamp for levelling staffs. Large receiving window (125 mm) and clear height indication (audible and visible). Ideal for use with smaller excavators.



TECHNICAL DATA	FMR 600	SUPPLIED WITH FMR 600	FEATURES
		ART.-NO. 265000	
Accuracy fine	± 5mm	<ul style="list-style-type: none"> Batteries Container Clamp for levelling staff 	<ul style="list-style-type: none"> Attachment to levelling staff by use of clamp or directly to the machine with built-in magnets LCD, LEDs and 3 different tones indicate heights Memory function of last received data Water / dust resistant
Accuracy coarse	± 12,5mm		
Working range	200 m		
Receiving window	125 mm long		
Reception angle	240°		
Power supply	4 x AA Alkaline		
Operating time	50 h		
Temperature range	-20°C to +50°C		
Dimensions	170 x 100 x 42mm		
Dust / water protection	IP 66		
Weight	0,96 kg		

Set FMR 700-M/C Machine Control Receiver Set

» A machine control receiver to improve the operating accuracy of your construction machinery. Used for permanent level control the FMR 700 receiver has a 360° reception range.



» Clamp

» Magnet

» FRP 707

TECHNICAL DATA	FMR 700-M/C UND 706-M/C	FEATURES	SUPPLIED WITH FMR 700-M/C UND 706-M/C	
Accuracy fine	± 2 mm – ± 10 mm	<ul style="list-style-type: none"> Length of receiving window: 25 cm Connect to the machine with screw clamps or with strong magnets (both supplied in the kit) Detects beam from rotating laser levels of any brand Remote display 	Machine control receiver, built-in rechargeable battery, charger, 12 / 24V-battery cable, remote display with connection cable, hard case	
Accuracy coarse	± 5 mm – ± 23 mm			
Rechargeable batteries	7,2 V NiMH			
Operating time	40 h			
Charging time	15 h			
Temperature range	-20°C to +50°C			
Dimensions	376 x 180 x 49mm			
Weight	3,1 kg			
				Also supplied separately:
				<ul style="list-style-type: none"> Machine control receiver FMR 706-M / C, built-in battery, charger, 12 / 24V battery cable, hard case Remote display with connection cable

FMR 706-M/C (MAGNET AND CLAMP)	SET FMR 700-M/C (MAGNET AND CLAMP) + FRP 707
ART.-NO. 260550	ART.-NO. 260500
FRP 707 (WITHOUT MACHINE CONTROL RECEIVER)	
ART.-NO. 263000	

FMR 800-M /C SET Machine Control Receiver

» **Machine control receiver used with construction machinery to increase accuracy and boost productivity. For continuous tilt and height control.**

- Bulldozer: Blade tilt and height control
- Excavator: Bucket tilt and height control
- RF communication link to the remote display



TECHNICAL DATA		FMR 800-M/C	MACHINE CONNECTION	FEATURES
Beam reception angle		360°	<ul style="list-style-type: none"> · Magnetic connection directly to the machine · Clamp connection to the machine mast · Mast diameter 40-50 mm 	<ul style="list-style-type: none"> · Length of receiving window: 27 cm · Will detect the beam from any brand of rotating laser (red) · Dust / water protected metal housing · Wireless remote display with suction pad and integrated magnets
Detectable rotating laser speeds rpm		300 - 1200		
Working range class 2-laser		250 m		
Working range class 3R-laser		350 m		
Battery recharging time		4 - 5 h		
Automatic power-off, after		60 min.		
Dust / water protection		IP 66		
Operating temperature		-10 °C to +50 °C		
Dimensions		370 x 132 x 92 mm		
Weight (receiver only)		3.95 kg		

BULLDOZER MODE		EXCAVATOR MODE	
Blade tilt (Receiver movement left / right tilted)		Bucket tilt (Receiver movement in longitudinal direction forward / backward tilted)	
Accuracy	fine / standard / coarse ± 0.5° / ± 1.5° / ± 2.5°	Accuracy	fine / standard / coarse ± 0.5° / ± 1.5° / ± 2.5°
Indication LED (left / right sideways)	5	Indication LED, grouped	3
		3 signals: rapid/slow flashing, permanent light	
Height indication (Receiver movement up / down)		Height indication (Receiver movement up / down)	
Accuracy	fine / standard / coarse ± 5 / ± 15 / ± 30 mm	Accuracy	fine / standard / coarse ± 5 / ± 15 / ± 30 mm
Indication LED (up / down)	3	Indication LED, (up / down) grouped	4
		Extended upper LED for bucket dipping motion	



Clamp 1

SUPPLIED WITH FMR 800-M/C	SUPPLIED WITH FMR 800-M/C SET
ART.-NO. 264500	ART.-NO. 264550
<ul style="list-style-type: none"> · Machine receiver FMR 800-M / C with built-in rechargeable battery · Charger · Hard carrying case 	<ul style="list-style-type: none"> · SET Machine receiver FMR 800-M / C with built-in rechargeable battery · Charger · Remote display FRD 807 with suction pad and batteries · Hard carrying case



FRD 807 Remote Display

1 Suction pad attachment



TECHNICAL DATA	FRD 807	SUPPLIED WITH REMOTE DISPLAY FRD 807
Wireless (RF) communication range	10 m	ART.-NO. 264540
Communication channels	3	
Machine connection:	<ul style="list-style-type: none"> · integrated magnetic pads · strong suction pad for cabin windscreen 	<ul style="list-style-type: none"> · Remote display FRD 807 · Suction pad · Batteries
Power supply	4 x AA alkaline	
Dimensions	170 x 100 x 42 mm	
Weight	1.1 kg	

Magnetic Support for Machine Control Receiver

» For connection to construction machinery. Allows the receiver to be easily aligned to the laser plane. Strong magnets ensure non-slip grip onto the machine. Quick release lever allows the magnetic support to be detached easily. Suitable for all brands of machine receivers using a clamp fixing system.



MAGNETIC SUPPORT FOR MACHINE CONTROL RECEIVER

ART.-NO. 290810

SURVEYING INSTRUMENTS

AT OUR CORE:
PRECISION AND INNOVATION.

Decades of experience – an important factor in the quality of our instruments. You can depend on geo-FENNEL surveying instruments to provide precise reliable results under all working conditions. Whether electronic or optical – our construction and engineering instruments are characterized by their intuitive ease of use, innovation and high accuracy.



You can find all of our surveying equipment in our separate catalogue, **Surveying instruments and accessories** along with GPS-controlled systems for surveying work for construction, land registry, industry and engineering.



N 32-Set Automatic Level



TECHNICAL DATA		N 32
ART.-NO. 400 GON		200532
ART.-NO. 360°		200533
Mean error 1 km double levelling		± 2 mm
Telescope magnification		32 x
Objective diameter		36 mm
Shortest focussing distance		0,3 m
Horizontal circle		400 gon / 360°
Weight		1,5 kg
FEATURES		
<ul style="list-style-type: none"> Robust metal housing Supplied in carton comprising N32, 5 m levelling staff and tripod for convenient storage and delivery 		
SUPPLIED WITH		N 32-SET (400 GON & 360°)
<ul style="list-style-type: none"> N 32 level with carrying case Aluminium tripod 5 m levelling staff Carrying case 		

GFN 1 Automatic Level suitable for all construction sites

- » · 32 x Magnification
- Robust all-metal housing
- Handle for comfortable handling



TECHNICAL DATA		GFN 1	FEATURES	SUPPLIED WITH GFN 1 SET
Mean error for 1 km double levelling		± 1,5 mm	<ul style="list-style-type: none"> Robust metal housing with handle for comfortable handling Bubble reading mirror Optical sight for quick alignment to a levelling staff 	ART.-NO. 400 GON 200201
Telescope magnification		32 x		ART.-NO. 360° 200206
Objective diameter		36 mm		<ul style="list-style-type: none"> GFN 1 Level with carrying case Aluminium tripod 5 m levelling staff Set carton
Shortest focussing distance		0,4 m		
Working range of compensator		± 15'		
Levelling accuracy		± 0,3"		
Circular bubble		8' / 2 mm		
Horizontal circle		400 gon / 360°		
Dust / water protection		IP 54		
Weight (instrument only)		1,2 kg		
SUPPLIED WITH GFN 1				
<ul style="list-style-type: none"> ART.-NO. 400 GON 200200 ART.-NO. 360° 200205 				
<ul style="list-style-type: none"> Adjustment pin Carrying case 				

GFN 10 High-class Engineers' Level

- » · 32 x magnification and bright optics
- Robust all-metal housing
- Wedge-shaped reticle
- Internal circle and compensator test button
- Handle for comfortable handling



- 1 Compensator test button
- 2 Internal circle
- 3 Wedge-shaped reticle

SET
GFN 10 400 GON + FS 20 + BS 15-0
ART.-NO. 200220-S01



TECHNICAL DATA		GFN 10	FEATURES	SUPPLIED WITH GFN 10
Mean error for 1 km double levelling		± 1,0 mm	<ul style="list-style-type: none"> Robust metal housing with handle for comfortable handling Reticle in wedge-shape for most accurate reading Well protected internal circle Compensator test button Bubble reading mirror 	ART.-NO. 400 GON 200220
Telescope magnification		32 x		ART.-NO. 360° 200225
Objective diameter		40 mm		<ul style="list-style-type: none"> Adjustment pin Plumb bob Carrying case
Shortest focussing distance		0,6 m		
Working range of compensator		± 15'		
Levelling accuracy		± 0,3"		
Circular bubble		8' / 2 mm		
Horizontal circle		400 gon / 360°		
Dust / water protection		IP 65		
Weight (instrument only)		1,6 kg		



GFE 32 und GFE 32-L Engineers' Automatic Level

» A high quality engineers' automatic level with the most robust compensator available on the market. Brilliant optical system for clear view at all conditions.



» GFE 32, 360° » GFE 32-L, 360°

TECHNICAL DATA	ENGINEERS' AUTOMATIC LEVEL GFE 32, 360°	ENGINEERS' AUTOMATIC LEVEL GFE 32-L, 360°
ART.-NO.	210332	210333
Magnification	32 x	32 x
Clear objective aperture	45 mm	45 mm
Field of view	1°	1°
Shortest focussing distance	2 m	2 m
Mean error per 1 km double run levelling using index reference mark	±2 mm < 1 mm	±2 mm < 1 mm
Multiplication constant	100	100
Working range of compensator	±15'	±15'
Levelling accuracy compensator	2"	2"
Circular bubble	8' / 2 mm	8' / 2mm
Horizontal circle	360°	360°
Dust / water protection	IP 54	IP 54
Weight	2.5 kg	2.7 kg
Dimensions	280 x 160 x 140mm	280 x 160 x 140 mm
Temperature range	-25 °C to +50 °C	-25 °C to +50 °C
Laser beam switchable/class	—	635 – 670 nm / 2
Beam diameter	—	2 mm
Laser working range	—	120 m (during day) 300 m (twilight)
Deviation	—	5"
Operating time / power supply	—	8 h / 2 x AAA
Laser filter for eyepiece	—	yes

FEATURES

- Robust and temperature insensitive
- Highly accurate and free moving vertical axis
- Separate horizontal clamp
- Accurate tangent screw movement and focusing drive without backlash
- Optical sighting device
- Excellent image quality
- Service-friendly due to simple construction
- GFE 32-L with laser pointer**
- Coaxial, focusable laser beam integrated into the telescope optics
- For advanced applications or one-person use
- Compensator function device displayed within the telescope field of view
- Height differences visible, optically
- Working in low light conditions (twilight, dark rooms)

SUPPLIED WITH

- Container
- Adjustment pin
- Screwdriver
- Dust brush
- Plumb bob

FLP 100 Laser Zenith Plummet

» A precise laser plummet incorporating a coaxial telescope for both laser and optical observations.



TECHNICAL DATA	FLP 100	FEATURES
Magnification	26 x	· Easy to use with two laser plummets (up and down)
Clear objective aperture	36 mm	
Shortest focusing distance	0.4 m	
Laser pointer		· Laser dot visible up to ≥ 120 m
Laser class / Wave length	2M / 635 nm	
Spot size Ø	3 mm / 80 m	
Max. visible distance (day)	≥ 120 m	
Max. visible distance (night)	≥ 250 m	
Deviation to optical axis	≤ 3"	· High accuracy for precision work
Accuracy	± 2,5 mm / 100 m	
Optical plummet		
Laser class / wave length	1 / 650 nm	
Accuracy	± 1 mm / 1,5 m	
Plate level	20" / 2 mm	
Power supply	2 x AA Alkaline	
Temperature range	-10 °C to +50 °C	
Dust / water protection	IP 54	
Weight	2.8 kg	

SUPPLIED WITH

- ART.-NO. 310000
- Set of alkaline batteries
- Target plate
- Container

FET 500 Construction Theodolite

» A versatile entry level optical theodolite.



SUPPLIED WITH FET 500	
ART.-NO. 400 GON	350000
ART.-NO. 360°	350360

TECHNICAL DATA	FET 500	FEATURES
Magnification	20 x	· Built-in optical plummet
Objective aperture	30 mm	
Shortest focusing distance	1.2 m	
Direct reading	0.1 gon	
Estimation	10 mgon	
Temperature range	-40 °C to +50 °C	
Weight	2.0 kg	· Circular bubble, plate level
		· Telescope vial
		· Circle orientation device
		· Available in 400 gon or 360°

FET 220 Electronic Theodolite – easy to use

» For use in engineering, civil engineering and general construction.

» Particular attention has been paid to making the FET 220 user-friendly with a large easy-to-read display and a laser plummet for precise positioning over a ground point.



SUPPLIED WITH FET 220	
ART.-NO. 313000	
· Tribrach	
· Rechargeable battery	
· Charger	
· Battery compartment for alkaline batteries	
· Container	

TECHNICAL DATA	FEN 132	FEATURES
Magnification	30 x	· Large easy-to-read LCD
Clear objective diameter	45 mm	
Shortest focussing distance	1,5 m	
Angle measurement	absolute encoder	
Accuracy	20" (6 mgon)	
Minimum reading	10" (3 mgon)	
Measuring units	400 gon / 360°	
Laser plummet: spot size	Ø 2 mm at 1,5 m	
Laser plummet: laser class	2	
Operating time / power supply	18 h / NiMH	
Temperature range	-20°C to +50°C	
Dust / water protection	IP 54	
Weight (instrument only)	4,2 kg	

FGS Lite

Now surveying can be easy and affordable!

» The new geo-FENNEL GNSS-Antenna FGS Lite with geo-FENNEL Survey Software supports the user in a variety of simple surveying tasks.

» Whether field survey or stakeout, the data can be quickly and accurately transmitted or read from Android controllers and mobile devices such as standard tablets or mobile phones.

» The geo-FENNEL Survey Software is a simplified, android-based application software that can handle simple measurement tasks. Stake out points and lines, area calculation and the calculation of point coordinates.

Measured data can be imported or exported as ASCII or DXF.

The geo-FENNEL Survey Software supports all geo-FENNEL GNSS Antennas, whether in UHFMode or in a CORS with online transformation. Data can be picked up from a FTP-Server which is automatically created by the software.

The measurement window automatically includes an open source map, which allows the user to navigate quickly.

Switching between radio (FGS 1 and FGS 100) and NTRIP-Caster can be enabled within a short time by creating profiles.

Earth moving / road construction	Topo survey, measurement of original lay of land, stakeout, area calculation, batter board, determine lines, mass determination, point recording / monitoring
Mining	Mass determination, inventory, stake out of drill holes for explosions in the quarry
Contractor	Area calculation / mass determination
Garden / landscaping	Area calculation, stakeout of points and lines, implement planting plans, stake out bedding borders
Archaeologists	Measuring finds, recording and documentation of finds
Municipality	Water pipes and cable data base, inventory of GIS objects (lanterns, park bench, garbage can, etc.), border check, area calculation
Water management	GIS database for water supply, basic plans for development of building areas
Agriculture / forest	Border determination, staking points, area calculation
Assessor National resources	Geological survey, grab- / sondage measure, topo survey



TECHNICAL DATA	FGS LITE
ART-NO.	740100
Channels	352
GPS	L1 C/A, L2C, L2P
GLONASS	L1C/A, L1P, L2C/A, L2P
BEIDOU	B1, B2
GALILEO	E1, E2, E5
QZSS	reserved
SBAS	WAAS, EGNOS, MSAS, GAGAN
File format	RTCM 2.x, 3.x, CMR, CMR+
Accuracy	
Static	2.5 mm + 1 ppm horizontal 5.0 mm + 1 ppm vertical
RTK	8.0 mm + 1 ppm horizontal 15.0 mm + 1 ppm vertical
DGPS	<0.4 m 3D RMS
SBAS	1 m 3D RMS
Stand-Alone	1.5 m 3D RMS
Communication	
Bluetooth	4.0, for Windows and Android
Protocol	RS232
Dimensions	
Measurements	13.7 x 7.2 x 5.0 cm
Weight	< 0.35 kg incl. rechargeable battery
Environmental properties	
Working temperature	-20°C to +60°C
Storage temperature	-30°C to +70°C
IP-protection	IP 54
Shock and protection	1.5 m drop to floor
Power supply	
Battery capacity	3400 mAh
Power supply	1.6 W
Charging time	2.5 h
Working time	more than 9 h

TECHNICAL DATA	FELDRUCHNER FAC1 WITH ANDROID-BETRIEBSSYSTEM
ART-NO.	740110
Overview	
Operating system	Android 6.0
Display	4,3" Touch-Display
CPU	1,3 GHz
Keypad	Yes, with backlight
Camera	8 Megapixel
Flash	LED-Flashlight
SIM Slots	2
Communication	
WLAN	WLAN 802.11 a/b/g/n/ac
SIM 1	2G – 4G
SIM 2	GSM 850/900/180/1900
Bluetooth	BT 4.0
USB	Micro-USB
Dimensions	
Working time	> 14 h
Standby	720 h
Working temperature	-30°C to +60°C
Storage temperature	-30°C to +65°C
Weight	520 g incl. Battery
Shock and protection	0.8 m drop to floor
Electronics	
ROM / RAM	16 GB / 2 GB
Additional memory	TF-Card up to 64 GB

SUPPLIED WITH FGS LITE-SET OHNE FELDRUCHNER
ART-NO. 740100
<ul style="list-style-type: none"> · FGS Lite GNSS Receiver · GAT 300 GNSS Antenna · Rechargeable battery for FGS Lite · Charging cable for FGS Lite · Bracket for FGS Lite · Antenna connection cable for FGS Lite · Handy hard case · Survey Software
SUPPLIED WITH FGS LITE-SET MIT FELDRUCHNER
ART-NO. 740110
<ul style="list-style-type: none"> · FGS Lite GNSS Receiver · GAT 300 GNSS Antenna · Rechargeable battery for FGS Lite · Charging cable for FGS Lite · Bracket for FGS Lite · Antenna connection cable for FGS Lite · Handy hard case · Survey Software · Field Controller FAC 1 · Bracket for FAC 1

MEASURING INSTRUMENTS

WITH AN EYE TO THE FUTURE:
PRECISION MEETS INNOVATION.

No matter how difficult the conditions you encounter on a construction site – with our products, easy and efficient measurement is possible in every situation. They set standards for measurement results and provide a high level of quality through the combination of the most modern production technologies with the care and attention provided by our technical experts.



EasyWheel M20 Measuring Wheel

- » The compact and durable multi-purpose measuring wheel
- Easy-to-read display
- Foldable for easy storage and transportation
- Brake and «0» reset button incorporated into handle



- 1 The counter counts forward and backward
- 2 Robust hinge mechanism
- 3 Large folding stand for stability
- 4 Ergonomic handle with non-slip pistol grip



TECHNICAL DATA		FEATURES	
ART.-NO. 120		<ul style="list-style-type: none"> · Ergonomic handle with non-slip pistol grip · Brake and «0» reset integrated into the handle for ease of use · Smallest unit of measurement 10 cm · Counter adds when moving forward and subtracts in reverse · Movable pointer to ensure accuracy of starting point and finishing position · Large folding stand for stability · Coated wheel for excellent traction over a variety of surfaces 	
Accuracy	± 0,1%		
Measuring distance	0 - 9.999,9 m		
Wheel circumference	1 Meter		
Extended size	1000 (L) x 140 mm (B)		
Folded size	510 (L) x 140 mm (B)		
Weight	1,8 kg		
SUPPLIED WITH M20			
<ul style="list-style-type: none"> · Measuring Wheel · Carrying case with shoulder strap 			

M 10 Precision Measuring Wheel

- | M 10 |
|--|
| ART.-NO. 110 |
| <ul style="list-style-type: none"> · Wheel circumference 1 m · Clamp for wheel · Robust support allows M 10 to stand upright · Dirt remover · Precision counter with „0“ reset · Sturdy spokes offer low resistance to wind ensuring ease of use · The highly visible colour of the wheel aids operator safety during use on roads · Weight 2,7 kg |



M 10S Precision Measuring Wheel

- | M 10S |
|---|
| ART.-NO. 141 |
| <p>Same as M 10, however:</p> <ul style="list-style-type: none"> · Heavy model with double-disk wheel made of metal · Weight 3,4 kg |



M 10K Case

- | M 10K CASE |
|--|
| ART.-NO. 011 |
| Case for M 10 and M 10S made from high-quality materials |



M 10T Bag

- | M 10T BAG |
|---|
| ART.-NO. 010 |
| Bag for M 10 and M 10S made from high-quality materials |

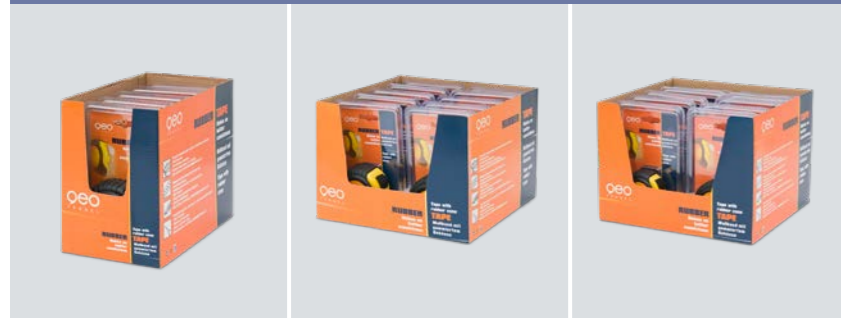


Rubber Tape

» Standard measuring tape. Blister packed in presentation display. Conforms to CE class II.



RUBBER TAPE	
ART.-NO. 3 m x 16 mm	M345012
ART.-NO. 5 m x 25 mm	M345014
ART.-NO. 8 m x 25 mm	M345015



Fast Speed Tape

» 3 x speed rewind. Nylon coated steel tape. Abrasion resistant and virtually unbreakable. Ergonomically designed to be comfortable and easy to use.



FAST SPEED TAPE	
ART.-NO. 30 m	M313030
ART.-NO. 50 m	M313050
<ul style="list-style-type: none"> · Tape width: 13 mm · Graduation in mm · Easy to grip · Accuracy: EEC class II 	



GeoTape 2in1 Laser Distancemeter with built-in 5m tape

» · Laser Distancemeter with built-in 5m tape
 · Ergonomic environment-friendly design
 · Easy to read white-on-black display with backlight
 · Professional quality, robust and pocket-sized
 · EC Class II tape measure accuracy
 · Nylon coated steel blade with magnetic hook

FEATURES
· Length and area measurement
· Laser measurement reference is always at the rear
· Independent use of Laser and Tape measure
· Magnetic end hook
· Positive toggle lock to secure blade at any length
· Metal belt clip
· Cover-protected USB port
· Concealed ON/OFF button to prevent mis-operation
· Auto switch-off to prolong battery life

TECHNICAL DATA	
ART.-NO. 300710	
Laser measuring range	up to 20m
Accuracy	± 2 mm
Resolution	1 mm
Tape length	5m
Tape accuracy	± 1,5 mm @ 5m
Blade width	19 mm
Auto switch-off Laser/Display	30 / 180 seconds
Laserclass / Wavelength	2 / 630-670 nm
Working temperature	0 to 40°C
Power supply / working time	Li-Ion / 5 h
Battery charging	via USB connection
Dimensions	83 x 79 x 54 mm
Weight (with batteries)	275g



SUPPLIED WITH
· USB charging cable
· Built-in Li-Ion battery

GeoDist® 50 Laser Distance Meter

- » Outstanding quality, versatile and accurate
- Compact, robust and reliable
- All class-leading features integrated
- Painter function
- Intuitive easy-to-use keypad and illuminated 4-line display
- Rubberised housing for protection and enhanced grip



**SUPPLIED WITH
GEODIST® 50**

ART.-NO. 300150

- Holster
- Batteries



TECHNICAL DATA	GEODIST® 50	FEATURES
Accuracy	± 2,0 mm	· Single/continuous measurement
Measuring distance	0,2 - to 50 m	· Maximum/minimum measurement
Laser class	2	· Area and volume
Dust/water protection	IP 54	· Painter function
Dimensions	120 x 45 x 26 mm	· Plus-/minus
Temperature range	0 - 40°C	· Pythagoras 1, partial height (2 points)
Power supply	2 x AAA alkaline batteries	· Pythagoras 2, overall height (3 points)
Weight (with batteries)	120g	· Point of reference: front, rear
		· Data storage (last 10 values)
		· mm, ft, inch
		· Display illuminated
		· Acoustic signal to confirm measurement
		· Automatic power off

GeoDist® 30 Laser Distance Meter

- » Extremely small and lightweight
- The tool that fits into the smallest pocket
- Easy to use spacious keyboard with large keys



FEATURES

- Area
- Volume
- Point of reference: front, rear
- Automatic power off
- Illuminated display
- mm, ft, inch
- Acoustic signal confirming the measurement

SUPPLIED WITH GEODIST® 30	TECHNICAL DATA	GEODIST® 30
ART.-NO. 300130		
· Holster	Accuracy	± 2,0 mm
· Batteries	Measuring distance	0,05 - 30 m
	Laser class	2
	Dust/water protection	IP 54
	Temperature range	0 - 40°C
	Power supply	2 x AAA

GeoDist® 600LR Laser Distance Meter

- » Laser distance meter for range and speed measurement
- Outstanding quality, robust and pocket-sized
- Easy to use with only two buttons
- Built in angle sensor for height differences
- LCD-Display with crosshairs
- Rubberised housing for protection and enhanced grip



TECHNICAL DATA	GEODIST® 600LR
Measuring distance	600 m
Accuracy	± 0,5 m
Scope magnification	6 x
Field of view	7°
Objective lens diameter	22 mm
Eyepiece lens diameter	16 mm
Exit pupil diameter	3,7 mm
Diopter	± 5°
Accuracy of speed measurement	± 1 km/h
Dust/water protection	IP 54
Laser class / wavelength	1 / 905 nm
Temperature range	0 - 40°C
Power supply	3V 1xCR2 for about 10.000 times
Dimensions	121 x 79 x 45 mm
Weight (with batteries)	215 g

FEATURES

- Speed measurements up to 300 km/h
- Single and continuous measurement
- Built-in angle sensor
- Measurements of horizontal distances
- Measurement of height differences
- Autopower switch off
- Flagpole scanning, perfect for Golf players
- Golf trajectory compensation
- Can measure in meter and yard

**SUPPLIED WITH
GEODIST® 600LR**

ARTIKEL-NR. 300600

- Holster
- Battery

DISTO D1

» Handy laser distance meter with integrated Bluetooth® Smart technology. Precise measurements can easily be transferred to your smart phone or tablet using the Leica DISTO™ sketch app.



SUPPLIED WITH DISTO D1	
ART.-NO. 300003	
<ul style="list-style-type: none"> · Holster · Batteries 	
Range and accuracy test according to DIN ISO 16331-1	

TECHNICAL DATA	DISTO D1
Accuracy	± 2,0 mm
Measuring distance	0,2 – 40 m
Laser class	2
Dust / water protection	IP 54
Dimensions	115 x 43,5 x 23,5 mm
Weight	87 g

FEATURES	
<ul style="list-style-type: none"> · Distance measurement · Permanent measurement · Bluetooth® Smart · Leica Disto™ sketch app · Illumination of display · mm, ft, inch · Acoustic signal confirming the measurement 	

DISTO D110

» World's smallest laser distance meter with integrated Bluetooth® Smart technology. Makes it possible to easily create floor plans and sketches using precise measurements from the Leica DISTO™ D110 quickly by connecting it with the Leica DISTO™ sketch app on your smartphone or tablet.



TECHNICAL DATA	DISTO D110	FEATURES	SUPPLIED WITH DISTO D110
			ART.-NO. 300010
Accuracy	± 1.5 mm	<ul style="list-style-type: none"> · Permanent measurement area · Bluetooth® Smart · Leica Disto™ sketch app · Illumination of display · mm, ft, inch · Acoustic signal confirming the measurement 	<ul style="list-style-type: none"> · Holster · Batteries
Measuring distance	0.2–60 m		
Laser class	2		
Dust / water protection	IP 54		
Dimensions	120 x 37 x 23 mm		
Weight (with batteries)	92 g		
Range and accuracy test according to DIN ISO 16331-1			

DISTO D2

» Now with Bluetooth®, a fully integrated intelligent endpiece, a bright white display and an ISO certified measuring engine that drives 1 mm accuracy and 100 m measuring range.

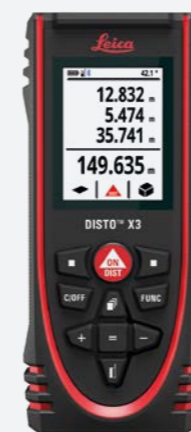


TECHNICAL DATA	DISTO D2	SUPPLIED WITH DISTO D2
		ART.-NO. 300002
Accuracy	± 1,5 mm	<ul style="list-style-type: none"> · Holster · Batteries
Distance	100 m	
Laser class	2	
Dust / water protection	IP 54	
Weight (with batteries)	100 g	
Range and accuracy test according to DIN ISO 16331-1		

FEATURES	
<ul style="list-style-type: none"> · Subtraction / addition · Minimum / maximum measurements · Area / volume calculation · Memory: Last 10 values · Multifunctional end-piece 	<ul style="list-style-type: none"> · Bluetooth® Smart · Leica Disto™ sketch App · Illuminated display · mm, ft, inch · Beep (switchable on/off) · Pythagoras functions

DISTO X3

» The Leica DISTO™ X3 is perfect for tough construction site conditions. It is drop-tested up to 2 m in height, water jet and dust protected to IP 65 standards.



SUPPLIED WITH DISTO X3	
ART.-NO. 300300	
<ul style="list-style-type: none"> · Holster · Batteries 	
Range and accuracy test according to DIN ISO 16331-1	

TECHNICAL DATA	DISTO X3
Accuracy	± 1,0 mm
Distance	0,05 – 150 m
Laser class	2
Dust / water protection	IP 65
Dimensions	132 x 56 x 29 mm
Weight (with batteries)	184 g

FEATURES	
<ul style="list-style-type: none"> · X-Range Power Technology · Tilt sensor · DISTO™ transfer for Windows · DISTO™ Plan app for iOS and Android · Smart Room function support · General data interface: Bluetooth® Smart · Data interface for 3D point data: Bluetooth® Smart · Multifunctional endpiece with automatic reference detection · 2 m drop tested 	

DISTO X4

» The DISTO™ X4 is equipped with a pointfinder camera allowing you to easily target distant objects in bright sunlight. Even if the laser dot cannot be seen, the target appears clearly on the large colour display. The high-resolution screen ensures a crystal clear image. Distance measurements are absolutely precise over long distances.

SUPPLIED WITH DISTO X4	TECHNICAL DATA	DISTO X4	FEATURES
			ART.-NO. 300400
<ul style="list-style-type: none"> · Holster · Batteries 		Precision ± 1,0 mm Distance 0,05 – 150 m Laser class 2 Dust / water protection IP 65 Dimensions 132 x 56 x 29 mm Weight (with batterie) 188 g	<ul style="list-style-type: none"> · X-Range Power Technology · Tilt sensor · Memory of last 20 measurements · DISTO™ transfer for Windows · DISTO™ Plan app for iOS and Android · Smart Room function support · Multifunctional endpiece with automatic reference detection · General data interface: Bluetooth® Smart · Data interface for 3D point data: Bluetooth® Smart · 2 m drop tested
Range and accuracy test according to DIN ISO 16331-1			



DISTO X4 SET + DST 360

» **Point to Point Measuring (P2P)**
The DST 360 is a great addition for your Leica DISTO™ X3 and X4. It will transform your handheld tool into a real station allowing you to measure distances between any 2 points. In combination with the Leica DISTO™ Plan app you can draw scaled plans which can be used in CAD tools.

» Metal design, precise aiming through fine adjustment handles, job site ready in robust case (IP 67)



» Disto X4 with DST 360



» Complete Disto X4 Set

SUPPLIED WITH DISTO X4 SET + DST 360	
ART.-NO. 300436	
<ul style="list-style-type: none"> · Disto X4 · DST 360 · Tripod · Robuster case (IP 67) · Holster · Batteries 	
Range and accuracy test according to DIN ISO 16331-1	

DISTO D510

» Colour display, digital pointfinder, TILT sensor: Reliable outdoor applications.



TECHNICAL DATA	DISTO D510	FEATURES	SUPPLIED WITH
			ART.-NO. 300007
Distance	0.05 – 200 m	<ul style="list-style-type: none"> · Minimum / maximum · Permanent measurement · Plus / minus · Area / volume · Room function summary · Indirect height measurement (Pythagoras) · Measurement despite obstructions · Measurement of facade areas · 360° TILT sensor · Bluetooth® smart 	<ul style="list-style-type: none"> · Holster · Hand loop · Batteries
Accuracy	± 1.0 mm		
Dust / water protection	IP 65		
Weight	198 g		
Laser class	2		

DISTO D810 touch

» Large touchscreen for intuitive use, camera function, measurements inside a picture, Bluetooth® Smart.



TECHNICAL DATA	DISTO D810	FEATURES	SUPPLIED WITH
			ART.-NO. 300009
Distance	0.05 – 200 m	<ul style="list-style-type: none"> · Measurements despite obstructions · Measurement of facade areas · Bluetooth® · 360° TILT sensor for measurement of any slope (even overhead) 	<ul style="list-style-type: none"> · Holster · Hand loop · Batteries
Accuracy	± 1.0 mm		
Dust / water protection	IP 54		
Weight	238 g		
Laser class	2		
			ART.-NO. 300013

DISTO D810 touch SET

» The D810 touch SET includes a D810, a TRI170 Tripod, Leica's patented FTA360 Fine Tune Tripod Adapter and a hard case to keep it all organized.



DISTO D810 TOUCH SET

ART.-NO. 300013



» DISTO D810 touch

DISTO S910

Measure anything from anywhere with P2P technology

3D Measurement

The integrated Smart Base is key to Point-to-Point (P2P) Technology. It enables distance measurements to be taken between any two points from just one location. The combination of P2P Technology and an integrated tilt sensor opens up completely new measurement possibilities, making the DISTO S910 a universal measurement tool with a wide variety of applications.

Point to Point Measurements

P2P Technology allows you to carry out complex measurement tasks quickly, accurately, and most importantly, safely - even if the area you need to measure is hard to reach.

Data Capture in CAD Format

The DISTO S910 can save all captured measurement points as a DXF file. The file is then available to download via a USB connection to a PC. This completely digitalised workflow saves time and money as it significantly reduces errors.

Measure and document

The Leica DISTO Plan app* allows you to document and visualise your measurements. In combination with the DISTO S910 it enables the 3D measurement functionality, allowing for 2D or 3D measurements to be captured. * in app purchases.

Real-Time Transfer of Point Data

Transfer measurement data directly on site via a WLAN connection to your PC and process it further in your preferred software. Create 'as-built' documentation on site or confirm a room layout in real-time by transmitting as many measurement points as required – with or without pictures.

Smart Area Measurement

Simply measure the outline of an area – clock- or counterclockwise – and immediately see the result on the display. No matter how complex the shape of an area is.

Outdoor Measurement

The DISTO S910 has a pointfinder with a 4x zoom. It allows for accurate measurements even under challenging lighting conditions, such as outdoors in bright sunlight.



FEATURES	
Minimum / Maximum	Camera function
Permanent measurement	Measure with the picture
Plus / minus	Touch screen
Area / Volume	Compass
Painter function	Point-to-Point measurements
Tilt measurement	Smart angle measurement
Pointfinder with 4x zoom	Smart area measurement
Sloped object measurement	DXF data capture
Height tracking	WLAN data transmission
Height profile measurements	Bluetooth® SMART



TECHNICAL DATA	DISTO S910	SUPPLIED WITH DISTO S910	SUPPLIED WITH DISTO S910 P2P-PACKAGE
		ART.-NO. 300913	ART.-NO. 300912
Distance	0,05 - 300 m	<ul style="list-style-type: none"> · Holster · Handloop · Smart base extension · Charger 	<ul style="list-style-type: none"> · Holster · Handloop · Smart base extension · Charger · GZM3 Target plate · FTA360-S Tripod adapter · Tripod TRI 120 · Hard case
Accuracy	± 1.0 mm		
Dust / water protection	IP 54		
Weight	290 g		
Laser class	2		

Electronic Slope Measurers

» Our latest generation of inclinometers with a new enhanced TILT sensor that offers the following:

- Fast reaction time
- A stable display for improved accuracy
- Improved thermal stability
- Zero position re-set at any position
- Illuminated display

S-Digit mini +

» Electronic inclinometer. Handy-size and accurate. This ensures easy measurement even in the most difficult situations.



TECHNICAL DATA	S-DIGIT MINI +	FEATURES	SUPPLIED WITH
			ART.-NO. 610010
Working range	4 x 90°	<ul style="list-style-type: none"> · Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · HOLD function to freeze measurement · Illuminated display · Magnetic housing · 1/4" thread for camera tripod 	· Padded bag
Resolution	0.1° / 0.1%		· Batteries
Accuracy	± 0.1°		
Measuring units	°, %, mm/m, in/ft		
Power supply	3 x AA Alkaline		
Operating time	600 h		
Temperature range	-10°C to +45°C		
Weight (incl. batteries)	0.37 kg		
Size	164 x 60 x 32 mm		

S-Digit multi +

» Electronic inclinometer with a rotatable display for easy reading in many positions.



1 Easy reading even from above and integrated laser beam

TECHNICAL DATA	S-DIGIT MULTI +	FEATURES	SUPPLIED WITH
			ART.-NO. 630010
Working range	4 x 90°	<ul style="list-style-type: none"> · Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · 180° rotatable display · Visible laser beam to extend working range · HOLD function to freeze measurement · Illuminated display · Magnetic housing · 1/4" thread for camera tripod 	· Padded bag
Resolution	0.1° / 0.1 %		· Batteries
Accuracy	± 0.1°		
Measuring units	°, %, mm/m, in/ft		
Working range laser	20 m		
Accuracy laser	± 0.5 mm / 1 m		
Wave length / laser class	650 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	w/o laser 50 h with laser 20 h		
Temperature range	-10 °C to +45 °C		
Weight (incl. batteries)	0.67 kg		
Size	305 x 60 x 32 mm		



S-Digit 60 +

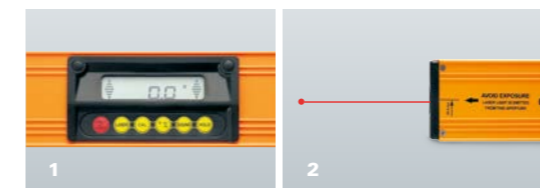
» Robust slope measurer. Length 60 cm. Incorporated laser beam.

» NEW: Magnetic base.



- 1 Clearly visible display – standard or “overhead”
- 2 With laser beam to extend working range

TECHNICAL DATA	S-DIGIT 60 +	FEATURES	SUPPLIED WITH
			ART.-NO. 620010
Working range	4 x 90°	<ul style="list-style-type: none"> · Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · Visible laser beam to extend working range · HOLD function to freeze measurement · Illuminated display · 1/4" thread for camera tripod 	· Padded bag
Resolution	0.1° / 0.1 %		· Batteries
Accuracy 0° and 90°	± 0.1°		
Accuracy 1° – 89°	± 0.2°		
Measuring units	°, %, mm/m, in/ft		
Working range laser	20 m		
Accuracy laser	± 0.5 mm / 1 m		
Wave length / laser class	650 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	w/o laser 50 h with laser 20 h		
Temperature range	-10 °C to +45 °C		
Weight (incl. batteries)	0.86 kg		
Size	600 x 60 x 32 mm		



S-Digit 60WL + and S-Digit 120WL +

» Electronic inclinometers for everyday use.



TECHNICAL DATA	S-DIGIT 60WL +	S-DIGIT 120WL +
ART.-NO.	640010	640110
Working range	4 x 90°	4 x 90°
Resolution	0.1° / 0.1 %	0.1° / 0.1 %
Accuracy	0° and 90° = ± 0,1° 1° and 89° = ± 0,2°	0° and 90° = ± 0,1° 1° and 89° = ± 0,2°
Measuring units / display	°, %, mm/m, in/ft	°, %, mm/m, in/ft
Power supply	3 x AAA Alkaline	3 x AAA Alkaline
Operating time	60 h	60 h
Temperature range	-10 °C to +45 °C	-10 °C to +45 °C
Weight	0,93 kg	1,2 kg
Dimensions	600 x 60 x 27 mm	120 x 60 x 27 mm
SUPPLIED WITH S-DIGIT 60WL + / 120WL +	<ul style="list-style-type: none"> · Padded bag · Batteries 	
FEATURES	<ul style="list-style-type: none"> · Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements 	
	<ul style="list-style-type: none"> · 180° rotatable display · HOLD function to freeze measurement · Illuminated display · 1 or 2 recessed hand grips for ergonomic use 	

MEASURING INSTRUMENTS

MEASURING INSTRUMENTS

A-Digit 50 and 75

» Robust electronic angle measurer made of anodized aluminium.



FEATURES

- Angle measurement
- Supplement angle
- Easy mitre angle
- Compound angle mode
- Available in length of 50 cm and 75 cm

TECHNICAL DATA A-DIGIT 50 ET 75

Measuring range	0° – 225°
Digital angle accuracy	± 0,1°
Resolution	0.05°
Accuracy of vials	0.057° (1 mm / m)
Operation temperature	-10 °C to + 50 °C
Power supply	2 x AAA batteries
Operation time	100 h
Length unfolded A-Digit 50	991 mm
Length unfolded A-Digit 75	1410 mm
Weight A-Digit 50 (A-Digit 75)	0.9 kg (1.1 kg)

A-DIGIT 50

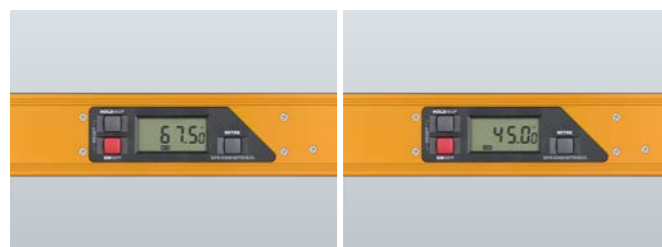
ART-NO. 650050

- Padded bag
- Batteries

A-DIGIT 75

ART-NO. 650075

- Padded bag
- Batteries



Multi-Digit Pro + All-in-one

» Electronic angle measurer, electronic slope measurer and laser spirit level. Easy and accurate. For measuring angles, inclinations, sloped and plane surfaces.



TECHNICAL DATA MULTI-DIGIT PRO +

Working range inclination	4 x 90°
Resolution	0.1° / 0.1%
Accuracy inclination 0° and 90°	± 0.1°
Accuracy inclination 1° – 89°	± 0.2°
Measuring units	°, %, mm/m, in/ft
Working range angle	0° – 180°
Resolution	0.1° / 0.1 %
Accuracy angle	± 0.1°
Working range laser	20 m
Accuracy laser	± 0.5 mm / 1 m
Wave length / laser class	650 nm / 2
Power supply	3 x AA Alkaline
Operating time	w/o laser 48 h with laser 20 h
Temperature range	-10 °C to +45 °C
Weight (incl. Batteries)	1.3 kg
Size	520 x 63 x 30 mm
Unfolded length	1000 mm

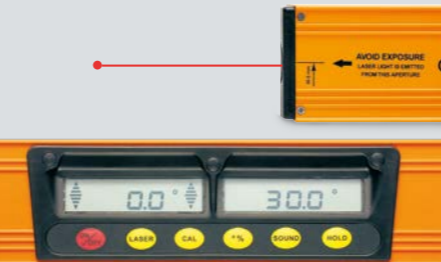
SUPPLIED WITH MULTI-DIGIT PRO +

ART-NO. 600010

- Padded bag
- Batteries

FEATURES

- Displays angle and inclination simultaneously
- Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°
- Inclination direction indication
- Zero position re-set at any position
- Automatic digit inversion for overhead measurements
- Visible laser beam to extend working range
- HOLD function to freeze measurement
- Illuminated display
- Magnetic base
- 1/4" thread for camera tripod
- 180° lock to extend the unit to 1 m length
- Arm can be locked in any position



Scale Master Pro XE

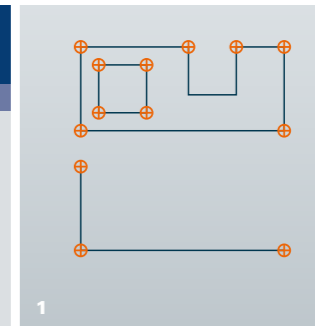
» Professional digital plan measurer. 91 architectural, engineering, map and metric blueprint scales. Perform instant linear, rectangular area and volume take-offs. Reads your measurement in feet / inches or metric. Subtract, constant and counter.



SUPPLIED WITH SCALE MASTER PRO XE

ART-NO. 6135

- Scale Master Pro XE
- Case
- Batteries
- Manual



1 Examples

OPTIONAL USB-CABLE

ART-NO. 5001B

- USB cable for data transfer to PC

Laser EasyFix 5 m Telescopic Rule



LASER EASYFIX 5 M

ART-NO. 452

- Telescopic rule with incorporated measuring tape
- Each section can be clamped
- Universal adapter for laser receiver. Receiver can be fixed with on-level mark on top of the rule. The height of the receiver (on-level mark) can be easily read at measuring display
- Maximum length 500 cm
- Retracted length 121.5 cm
- Incorporated circular bubble
- Weight 2.7 kg
- Incl. case

EasyFix 5 m Telescopic Rule



EASYFIX 5 M

ART-NO. 451

- Threaded pins for top and bottom plate for measuring to corners and edges
- Carrying case
- Easy reading of measuring display
- Auto-lock on each section when fully extended
- Incorporates two vials
- cm/mm-graduation on bottom section
- Retracted length 104 cm,
- Max. length 5 m
- Weight 2 kg

Surveyors' Folding Rules



SURVEYORS' FOLDING RULES

ART-NO. 410 3 m, erect
ART-NO. 412 2 m, erect

- Finest wood quality with strong joint springs
- Front side: Levelling graduations (E reading) 1 m black, 1 m red
- Reverse side: mm graduation in black
- Available in 2 m and 3 m lengths

Spirit Level M-Level ALU magnetic

Extremely robust for professionals

- » Precision milled measuring surfaces assure high frame accuracy
- Ergonomic handling
- For all areas of the craft



M-LEVEL ALU	ART.-NO.
M-Level 40 ALU 40 cm	660100
M-Level 60 ALU 60 cm	660105
M-Level 100 ALU 100 cm	660115
M-Level 120 ALU 120 cm	660120
M-Level 150 ALU 150 cm	660125

- FEATURES**
- Robust aluminium profile with reinforcing ribs
 - Powder-coated profile, 2 milled measuring surfaces
 - Solid block acrylic vials won't fog, leak or break
 - Top-read window maximizes readability
 - 2 rubberized frame openings for optimized handling
 - Shock absorbing rubber end caps protect frame
 - Lifetime accuracy warranty
 - M-version with 2 rare-earth magnets at bottom measuring surface

M-LEVEL ALU MAGNETIC	ART.-NO.
M-Level 40 M ALU 40 cm	660135
M-Level 60 M ALU 60 cm	660140
M-Level 100 M ALU 100 cm	660145

Spirit Level M-Level TPZ

Aluminium die-cast spirit level

- » High torsional stiffness, very robust
- Trapezium shape
- For all areas of construction



- TECHNICAL DATA**
- High-quality aluminium die-cast profile, powder-coated
 - 1 milled measuring surface
 - Solid block acrylic vials won't fog, leak or break



M-LEVEL TPZ	ART.-NO.
M-Level 40 TPZ 40 cm	660200
M-Level 60 TPZ 60 cm	660205
M-Level 80 TPZ 80 cm	660210
M-Level 100 TPZ 100 cm	660215

Spirit Level M-Level ECO

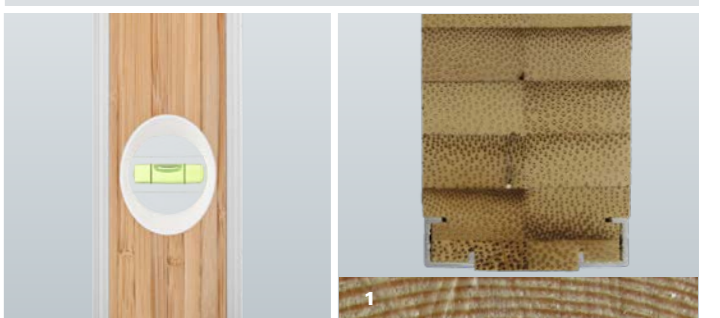
Bamboo spirit level – strong, durable, tough and sustainable

- » Particularly suitable for sensitive surfaces such as window sills, marble, granite, wood, etc.
- Despite being categorised as a “wood”, bamboo is a grass making it an environmentally sustainable material for use in construction
- Bamboo is the fastest growing plant on earth, with a tensile strength comparable to steel



- FEATURES**
- Strong, durable, laminated bamboo frame
 - Flush mounted protective metal buildings
 - Solid block acrylic vials won't fog, leak or break
 - Top-read window maximizes readability
 - 2 frame openings for optimized handling
 - Shock absorbing rubber end caps protect frame
 - Lifetime accuracy warranty

M-LEVEL ECO 60 & 120	ART.-NO.
M-Level 60 ECO 60 cm	660000
M-Level 120 ECO 120 cm	660010



1 Measurements are done via contact of bamboo surface to measurement area. Metallic rails are only stabilizing the spirit level and do not get in contact with the measurement area.

ENVIROMENTAL INSTRUMENTS

THE DEGREE OF PROFESSIONALISM:
EXTREMELY HIGH.

Suitable for a wide range of applications including electrical, food preparation, automotive, maintenance, construction, health and safety – the environmental measurement devices from geo-FENNEL are reliable partners wherever physical values such as temperature and humidity must be precisely determined. They are characterized by their ease of use and intuitive operation – taking precise measurement to achieve visible and tangible results.



FVE 100 Video Borescope



- » Video borescope for inspection and survey of inaccessible areas.
- » **Trades and tasks:** Sanitary, heating and ventilation, car industry, workshops, renovation.



TECHNICAL DATA	FVE 100
Camera head	
Viewable angle	0° and 180°
Focal length	6–7 cm
Viewable distance	5–15 cm
Diameter of camera head	17 mm
Light source	LED
Display	
Display size	3"
Resolution	960 x 240 pixel
Image transmission to LCD	Flexible gooseneck
CMOS Image sensor	300.000 pixel
Video output (to TV)	PAL / NTSC
Various	
Probe length	100 cm
Bend radius of probe	6 cm
Dust / water protection probe and camera	IP 67
Power supply	3.7 V / 2000 mAh Li-Ion
Operating time	4 h
Temperature range	-10 °C to + 50 °C
Humidity range	15 % – 85 % RH
Dimensions	240 x 160 x 100 mm
Weight with probe	0.584 kg

FEATURES
<ul style="list-style-type: none"> · Water proof camera head and probe · 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas · Camera head with LED lighting · Immediate transfer of the colour image to the large LCD display · 180° image rotation at the press of a button · Direct transfer of image to television or notebook · Accessories: <ul style="list-style-type: none"> · Hook and magnet attachments for object retrieval · Angle mirror attachment to "view around corners" · Powerful Li-Ion battery with charger

SUPPLIED WITH FVE 100
ART.-NO. 800700
<ul style="list-style-type: none"> · Video borescope · 1 m flexible gooseneck probe · TV cable · USB cable · Charger · Magnet · Hook · Mirror · Container

» **OPTIONAL FOR FVE 100 AND FVE 150**

Optional accessories: Gooseneck probes of 1 m, 2 m and 4 m length with standard camera head of 17 mm and with 9 mm only.

Reference	Gooseneck length	Camera head diameter	Art.-No.
P 1-17	1 m	17 mm	800750
P 2-17	2 m	17 mm	800751
P 4-17	4 m	17 mm	800754
P 1-9	1 m	9 mm	800752
P 2-9	2 m	9 mm	800753
P 4-9	4 m	9 mm	800755

FVE 150 Video Borescope



- » Video borescope for inspection and survey of inaccessible areas. Photos and videos can be stored for documentation purposes.
- » **Trades and tasks:** Sanitary, heating and ventilation, car industry, workshops, renovation.

1 With SD-card for fast transmission of the data to PC



TECHNICAL DATA	FVE 150	FEATURES	SUPPLIED WITH FVE 150
Camera head			
Viewable angle	0° and 180°	<ul style="list-style-type: none"> · Water proof camera head and probe · 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas · Camera head with LED lighting · Immediate transfer of the colour image to the large LCD display · 180° image rotation at the press of a button · Internal memory or SD-card to store images and video sequences · 4 GB SD-card included (supports up to 8 GB) · Date and time indication on the display · Transmission of video clips / images onto television or PC for editing or documentation · Multi-language menu (DE, EN, FR, ES, IT, FI) · Accessories: see FVE 100 	<ul style="list-style-type: none"> · Video borescope · 1 m flexible gooseneck probe · TV cable · USB cable · Charger · Magnet · Hook · Mirror · 4 GB SD-card · Container
Focal length	6–7 cm		
Viewable distance	5–15 cm		
Diameter of camera head	17 mm		
Light source	LED		
Display			
Display size	3.2"		
Resolution	320 x 240 pixel		
Image transmission to LCD	Flexible gooseneck		
CMOS Image sensor	300.000 pixel		
Video output (to TV)	PAL / NTSC		
Picture / video formats	JPG / 3 GP		
Resolution picture / video	320 x 240 Pixel		
Various			
Internal memory	70 MB		
Additional memory	4 GB SD-card		
	supports up to 8 GB (optional)		
Operation languages	EN, FR, DE, ES, IT, FI		
Probe length	100 cm		
Bend radius of probe	6 cm		
Dust / water protection probe / camera	IP 67		
Power supply	3.7 V / 2000 mAh Li-Ion		
Operating time	4 h		
Temperature range	-10 °C to + 50 °C		
Humidity range	15 % – 85 % RH		
Dimensions	240 x 160 x 100 mm		
Weight with probe	0.584 kg		

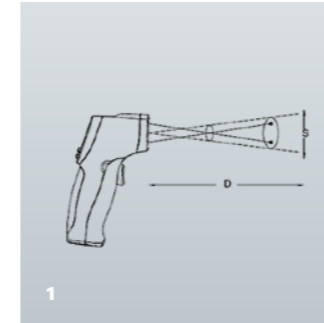


FIRT 550-Pocket and FIRT 800-Pocket Infrared Thermometer

- » Small and handy infrared thermometer, easy to operate, for versatile applications. Particular feature: Measurement with dual laser to focus the target.
- » **Trades and tasks:** Heating, ventilation and refrigeration systems, food industry, car industry, construction, building construction, fire inspection, injection molding industry, ship maintenance, isolation (heat loss), drying facility.

The dual laser dot to focus the target 1

TECHNICAL DATA	FIRT 550-POCKET	FIRT 800-POCKET
D(istance):S(pot)	12:1	10:1
Temperature range	-50 °C to +550 °C	-35 °C to +800 °C
Ø measuring spot at 100 cm	80 mm	100 mm
Emissivity	adjustable 0.1 – 1.0	adjustable: 0,1 - 1,0
Laser pointer	yes, dual	yes, dual
Auto data HOLD	yes	yes
Illuminated display	yes	yes
Max, Min	Max only	yes
High and low alarm	yes	yes
Power supply	9 V battery	9 V battery
Response time	< 1 sec	< 1 sec
Resolution display	0,1 °C	0,1 °C
Accuracy	± 1 %	± 1 %
Laser class	2	2
Weight	0,178 kg	0,178 kg
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm



FEATURES

- For non-contact measurement with laser dot. Quick measurements for:
- Surfaces which are difficult to reach
 - Moving or rotating objects
 - Electrified parts
 - Chemicals
 - Hot objects

SUPPLIED WITH FIRT 550-POCKET

- Case and battery

SUPPLIED WITH FIRT 800-POCKET

- Case and battery

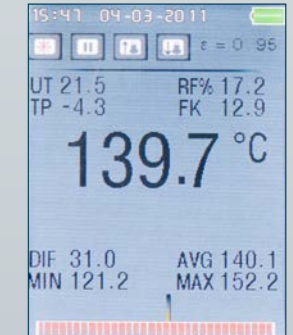


FIRT 1000 DataVision Infrared Thermometer

- » Infrared thermometer with a large temperature range and integrated 2.2" TFT colour LC display for monitoring and evaluation of monitored data.
- » **Trades and tasks:** Old-building renovation, heating, ventilation construction, building construction, food control, drying facility, isolation (heat loss).

TECHNICAL DATA	FIRT 1000 DATAVISION	FEATURES	SUPPLIED WITH FIRT 1000 DATAVISION
D(istance):S(pot)	50:1	<ul style="list-style-type: none"> · For non-contact temperature measurement with laser dot · Short response time of 150 ms and an accuracy of ± 1,0 % · 2.2" TFT colour LC display · Dual laser pointer for better targeting · Permanent measuring · Compatible with all standard connector Type-K thermocouples · Easy transmission of measurements to PC via USB · Memory socket for Micro-SD Cards · Integrated camera for images (JPEG) and video (AVI) · Date /Time function · Measurement of air humidity and ambient temperature · Determination of dewpoint 	<ul style="list-style-type: none"> · Battery · USB cable · Mini tripod · Type-K temperature probe · Case
Temperature range	-50 °C to +1000 °C		
Ø measuring spot at 100 cm	20 mm		
Emissivity	adjustable 0.10 – 1.0		
Laser pointer	yes, dual		
Auto data HOLD	yes		
Illuminated display	yes		
Max, Min, DIF, AVG record	yes		
High and low alarm	yes		
Power supply	3.7 V Li-Ion battery		
Response time	< 150 ms		
Resolution	0.1 °C – 1000 °C		
Temperature range Type-K probe	-50 °C to +1370 °C		
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C		
Accuracy (TK) (-50 °C to +1370 °C)	± 0.5 % ± 1.5 °C		
Laser class	2		
Weight	0.45 kg		
Dimensions	205 x 62 x 155 mm		

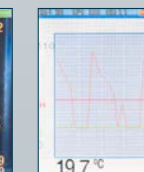
- 1 Display with simultaneous indication of:
 - Date / time
 - Ambient temperature
 - Dewpoint temperature
 - Temperature of the object measured
 - Minimum temperature
 - Maximum temperature
 - Temperature difference
 - Average temperature
 - Wet bulb temperature
 - Ambient humidity
 - Emissivity
 - Battery status indicator
- 2 Video camera function
- 3 Data log function
- 4 Digital camera function
- 5 Dewpoint temperature function



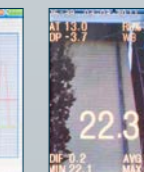
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2



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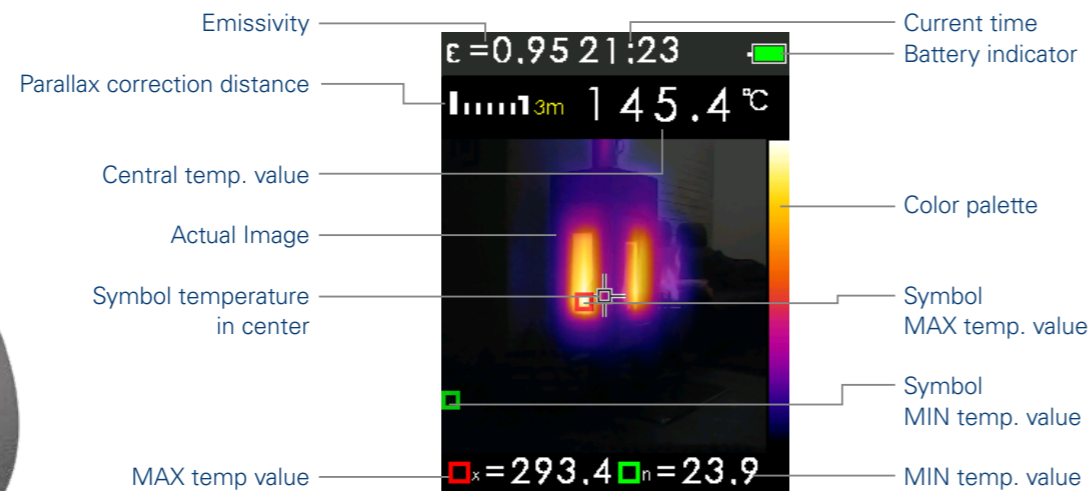


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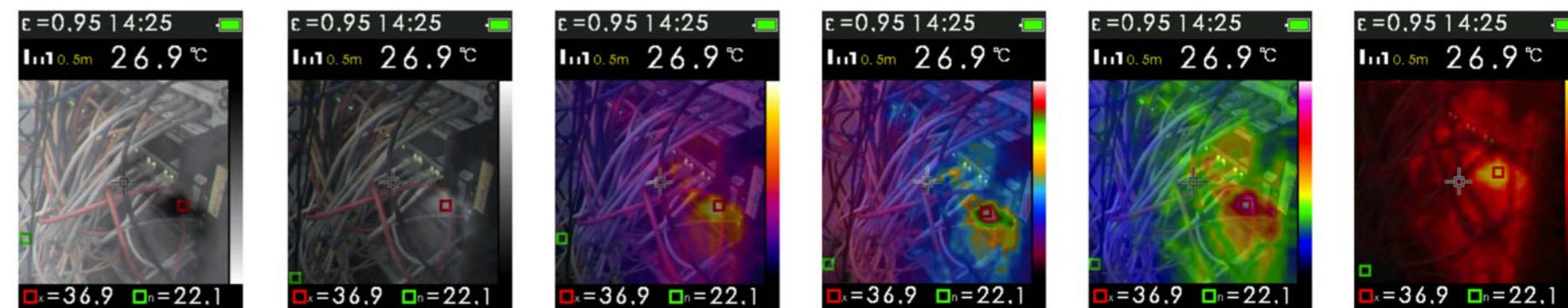
FTI 300 Thermal Imaging camera

» Thermal imaging camera for non contact measurement of surface temperature.

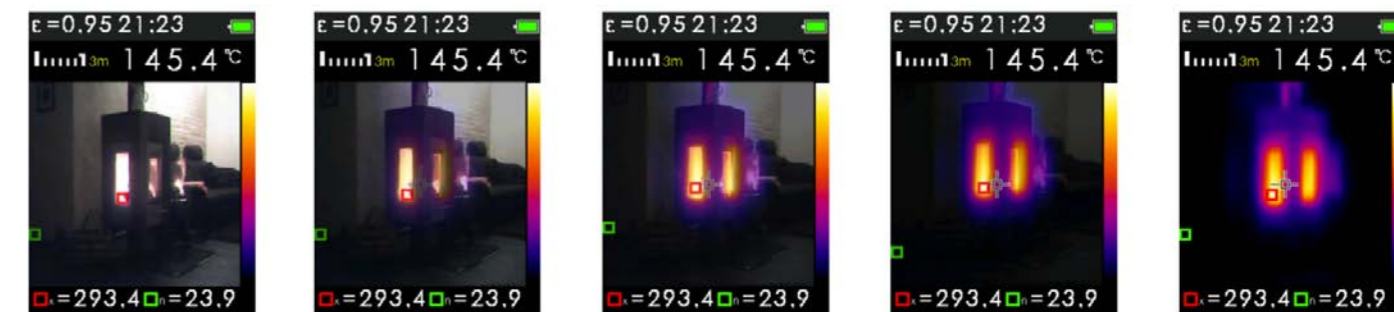
» **Trades and tasks:** Heating and ventilating installations, building insulation (heat loss), plumbing, electric, electronic, electro-mechanical and mechanical engineering, routine maintenance
Easy to locate hot and cold spots on electrical and mechanical installations.



FEATURES	SUPPLIED WITH FTI 300
<ul style="list-style-type: none"> Automatic indication of hot / cold spot with configurable alarm function PIP-function for blending of visible and infrared image (0-100%) for optimized orientation in the picture 6 colour palettes Memory for 6000 images / data transfer to PC for subsequent analysis 	<ul style="list-style-type: none"> ART.-NO. 800040 Li-ion battery & charger USB-cable for data transfer and charging Hard case



» grey (black) » grey (white) » Metal » Rainbow » High Contrast » Hot Metal



» 0% » 25% » 50% » 75% » 100%

TECHNICAL DATA	FTI 300	TECHNICAL DATA	FTI 300
Thermal imaging		Memory / Data transfer	
IR sensor resolution	32 x 31 pixel	Memory	MicroSD card 8 GB
Thermal sensitivity	<0,15°C (150 mK)	File format / memory size	.bmp / 6000 pictures
Field of view (FOV)	40° x 40°	PC interface	USB 2.0
Focusing	Fixed		
Colour palettes	6 - greyscale (white hot), greyscale (black hot), ironbow, rainbow, rainbow (high contrast), hot metal	Other	
Display	2.2" TFT colour LCD, 320 x 240 pixel	Power supply	3.7V Li-Ion battery
PIP (Blending fusion)	IR image with visible image in 6 steps (0 – 100%)	Menu languages	EN, DE, FR, ES, IT
		Weight	410 g
		Dimensions	205 x 155 x 62 mm
Infrared temperature measurement			
Temperature range	-20°C to +300°C		
Accuracy (at 25°C)	± 2% from reading or ± 2°C		
Measurement cursors	3 (centre, max, min)		

FIRT 1600 Data Infrared Thermometer



- » For very high temperature measurements.
- » With integrated memory for monitoring and analysis.
- » **Trades and tasks:** Foundry, monitoring of: brake drums, discs, electric motors, exhaust systems.

FHT 70 DataLog Temperature and Humidity Data Logger



- » Data logger for recording temperatures and air humidity over a longer period for check-up and analysis.
- » **Trades and tasks:** Cold storage house, drying, gallery, food industry.

FHT 60 and FHT 100 Humidity and Temperature Meter



» FHT 60



» FHT 100

- » **Trades and tasks:** Environmental monitoring, warehouses, production facilities, greenhouses (floristics), ventilating and air-conditioning, civil engineering, construction physics, expert report.

FHM 10 Moisture Meter



- » Pocket-size moisture meter for fast and convenient measurement of moisture content.
- » **Trades and tasks:** Building and construction: plaster, gypsum, concrete and mortar; wood construction: sawn timber; general: firewood, wood, cardboard, paper.

TECHNICAL DATA	FIRT 1600 DATA
D(distance):S(pot)	50:1
Temperature range	-50 °C to +1600 °C
Ø measuring spot at 100 cm	20 mm
Emissivity	adjustable 0.10 – 1.0
Laser pointer	yes, dual
Auto data HOLD	yes
Illuminated display	yes
Max, Min, DIF, AVG record	yes
Power supply	9 V battery
Response time	Less than 150 ms
Resolution	0.1 °C – 1000 °C
	1 °C over 1000 °C
Temperature range Type-K probe	-50 °C to +1370 °C
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C
Accuracy (TK) (-50 °C – +1370 °C)	± 1.5 % of reading + 3 °C
Laser class	2
Weight	0.3 kg
Dimensions	204 x 155 x 52 mm

FEATURES
<ul style="list-style-type: none"> · For non-contact temperature measurement with laser dot · 150 ms fast sampling with 1 % accuracy · High temperature range · Built-in dual laser pointers for accurate targeting · Permanent measuring · Compatible with all standard connector Type-K thermocouples · USB interface · Memory for 99 measurements · Easy transmission of data to PC via USB interface

SUPPLIED WITH
ART-NO. 800020
<ul style="list-style-type: none"> · Battery · USB cable · Mini tripod · Type-K temperature probe · Case

TECHNICAL DATA FHT 70 DATALOG		
Function	Range	Basic accuracy
Relative humidity	0 % – 100 % RH	± 3.0 %
Temperature	-40 C to + 70 C	± 1 °C
Logging rate	1 sec to 24 h	
Operating temperature	-35 °C to +80 °C	
Power supply	3.6 V Lithium	
Size	132 x 66 x 37	
Weight	180 g	
FEATURES	SUPPLIED WITH	
<ul style="list-style-type: none"> · Measures temperature and air humidity · Internal memory for 32.700 readings (3 x 10.900) · Selectable measurement cycle from 1 sec to 24 h · LCD with date, time, temperature, humidity, limit value · Software for analysis 	ART-NO. 800120 <ul style="list-style-type: none"> · 3.6 V lithium battery · Software · Clamshell 	

TECHNICAL DATA	FHT 60	FHT 100	FEATURES
ART-NO.	800100	800110	
Temperature range	-20 °C to +60 °C	-30 °C to +100 °C	<ul style="list-style-type: none"> · Fast measurement of relative humidity and temperature FHT 100 · Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature)
Humidity range	0 % – 100 % RH	0 % – 100 % RH	
Fast response time	yes	yes	
Illuminated display	yes	yes	
Max HOLD	yes	yes	
Data HOLD	yes	yes	
Dewpoint temperature	no	-30 °C to +100 °C	
Wet bulb temperature	no	0 °C to +80 °C	
Accuracies:			
Humidity	± 3.5 % RH	± 2 % RH	
Temperature	± 2 °C	± 0.5 °C	
Dewpoint	–	± 0.5 °C	
Wet bulb	–	± 0.5 °C	
			SUPPLIED WITH FHT 60 & FHT 100
			<ul style="list-style-type: none"> · Case · Battery

TECHNICAL DATA		FHM 10	FEATURES
SUPPLIED WITH FHM 10			
ART-NO. 800310			
· CR2032 batteries			
Measuring range wood		6 % – 44 %	
Accuracy wood		± 1 % *	
Measuring range other materials		0.2 % – 2 %	
Accuracy other materials		± 0,05 %	
Power supply		3 x CR2032 batteries	
Dimensions		130 x 40 x 25 mm	
Weight		102 g	
* Calibrated for European wood at 20 ° C			



FHM 20 Moisture Meter

» Moisture meter for wood and building materials.
Wood: Calibrated to 170 wood types in 8 groups.

» **Building materials:** Gypsum, plaster, concrete, concrete screeds, mortar, cardboard, paper.

Measurement of humidity permeation, surface humidity, determination of dry and humid areas.

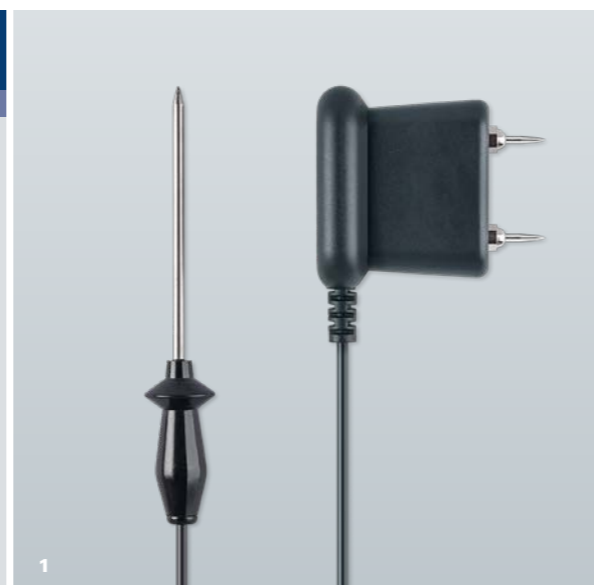
TECHNICAL DATA		FHM 20
Measuring principle	Electrical resistance	
Measuring range wood	6 – 99,9 %	
Accuracy wood	± 1 %*	
Measuring range building materials	3–33 %	
Accuracy building materials	± 1 %	
Range temperature measurement	0 °C to +60 °C	
Dimensions	180 mm x 50 mm x 31 mm	
Weight	175 g	

* Average adjustment for European wood at 20°C

FEATURES	
<ul style="list-style-type: none"> External moisture measurement probe External temperature probe: at measurement with moisture and temperature probe the moisture measurement is carried out with automatic temperature compensation. This leads to a higher accuracy. 8 mm measuring pins (replaceable) Protective cap with integrated calibration check Battery indicator Automatic power-off (adjustable time) 	

SUPPLIED WITH	
ART.-NO. 800320	
<ul style="list-style-type: none"> Moisture and temperature probe Padded bag 2 x spare measuring pins 2 x AAAA Batteries 	

1 Moisture and temperature probe



FFM 100 Moisture Detector

» Quick non-destructive measurement of surface humidity up to 40 mm measuring depth.

» **Trades and tasks:** Building materials, concrete floors, walls, ceilings.



TECHNICAL DATA		FFM 100
Measuring depth	20 – 40 mm	
Measuring range	0 – 100 digits	
Resolution	1 digit	
HOLD function	yes	
Display illumination	yes	
Automatic shut-off	yes	
Battery status indication	yes	
Dimensions	80 x 45 x 45 mm	
Weight	0.18 kg	
Power supply	Alkaline batteries	

FEATURES	
Quick measurement of humidity in building materials without destruction of the surface	
<ul style="list-style-type: none"> Indication of minimum / maximum values Sensor type: metal spheroid 	

SUPPLIED WITH	
ART.-NO. 800650	
<ul style="list-style-type: none"> Set of batteries 	

FTA 1 Thermometer- Anemometer

» A professional remote vane thermo-anemometer for measuring air velocity, air flow and temperature.

» **Trades and tasks:** Ventilation and air-conditioning: installation of ventilation systems, measurements of air flow and temperature; agriculture: crop spraying, ventilation surveys and crop storage; environmental monitoring.



TECHNICAL DATA				FTA 1
Air velocity				
m/s	Measuring range	Resolution	Accuracy	
ft/min	0.40 – 30.00	0.01	± 3 % ± 0.20 m/s	
km/h	80 – 5900	1	± 3 % ± 40 ft/min	
mph	1.4 – 108.0	0.1	± 3 % ± 0.8 km/h	
knots	0.9 – 67.0	0.1	± 3 % ± 0.4 mph	
	0.8 – 58.0	0.1	± 3 % ± 0.4 knots	
Air flow				
CMM (m³/min)	Measuring range	Resolution	Accuracy	
CFM (ft³/min)	0 – 999,900	0.001	0 – 999.9 m²	
	0 – 999,900	0.001	0 – 999.9 ft²	
Air temperature				
°C	Measuring range	Resolution	Accuracy	
°F	-10 °C to +60 °C	0.1 °C	± 2 °C	
	14 °F – 140 °F	0.1 °F	± 4 °F	
Various				
Power supply	1 x 9V			
Operating time	80 h			
Dimensions	75 x 203 x 50 mm			
Weight	280 g			

FEATURES	
<ul style="list-style-type: none"> Simultaneous display of air flow or air velocity and ambient temperature Large easy-to-read LCD with switchable backlight Maximum / minimum function 20 average readings for air flow and air velocity Data HOLD function 16 memory locations for area (8 CMM, 8 CFM) Remote vane with low-friction bearing (65 mm diameter) for accurate results 	

SUPPLIED WITH	
ART.-NO. 800450	
<ul style="list-style-type: none"> Sensor with 120 cm cable 9 V alkaline battery Container 	

FSM 130+ Sound Level Meter



» **Trades and tasks:** Industry, health and safety, school, public works, environmental measurements.



FGD 1 Gas Leak Detector

» Easy-to-use gas leak detector for locating gas leaks from a safe position.

» Detects following gas types: Natural gas, propane, butane, methane, acetone, alcohol, gasoline, jet fuel, carbon monoxide, ammonia, steam, hydrogen sulfide, smoke, industrial solvents, lacquer thinner, naphta.

» **Trades and tasks:** Gas industry, chemical industry, laboratory, car repair shops.

FCT 1 Data Coating Thickness Tester



» Coating Thickness Tester for fast testing and measuring of non-magnetic coatings on steel or non-ferrous metals.

» **Trades and tasks:** Paint shops, car industry, construction.



» Accessories for calibration

SUPPLIED WITH

ART.-NO. 800460

- 2 x AAA batteries
- USB cable
- Software
- Calibration accessories
- Case

TECHNICAL DATA	FCT 1 DATA
Working principle	Probe F Magnetic induction
Measuring range	Probe N Eddy current principle
Guaranteed tolerance (of reading)	0 – 1250 µm 0 – 49.21 mils
Resolution	0 – 850 µm (± 3 % +1 µm) 0 – 33.46 mils
Diameter of minimum area	(± 3 % +0.039 mils) 850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)
Basic thickness of material	0.1 µm 0.001 mils
Working temperature	0.1 µm 0.001 mils
Working relative humidity	20 % ~ 90 %
Power supply	2 x AAA Alkaline
Size	113.5 x 54 x 27 mm
Weight	110 g

PROPERTIES

- Internal memory for 80 readings per group
- Easy data transfer to PC by USB
- PC software
- Measures insulating coatings on non-ferrous metals
- Automatic recognition of the material (Fe / NFe)
- Sensor with V-groove for measurements of round objects
- Magnetic induction and eddy current measuring principle
- Single and permanent measurement
- AVG / Max / Min function
- Alarm function

FLM 400 Data Luxmeter



» Luxmeter for professional indoor measuring and monitoring of light insolation.

» **Trades and tasks:** Building construction, indoor construction, censor.

SUPPLIED WITH

ART.-NO. 800510

- 9 V battery
- Photo detector
- USB cable
- Software
- Carrying case

TECHNICAL DATA	FLM 400 DATA
Maximum measuring range	400,000 Lux
Accuracy	± 5 % ± 10 d (< 10,000 Lux) ± 10 % ± 10 d (> 10,000 Lux)
Resolution	0.1 Lux
Sampling rate	1.5 times / sec
Data HOLD function	yes
Automatic power-off	yes
Output	USB
Power supply	9 V NiMh
Size photo detector	115 x 60 x 27 mm
Size instrument	203 x 75 x 50 mm
Weight	390 g

FEATURES
· Measuring range 0 to 400,000 Lux
· Sampling rate 1.5 times / sec
· Large LC display
· Measuring range 4,000 digits
· 41 analogue bargraph indication
· 99 values in memory for direct reading on the meter
· 16,000 values can be stored in data logger
· Max / Min function
· High accuracy and short response time
· USB-interface

TECHNICAL DATA	FSM 130+	SUPPLIED WITH
		ART.-NO. 800210
Low range (Lo)	35–100 dB	· Case · Battery
High range (Hi)	65–130 dB	
Frequency weighting A, C	Lo 35–100 dB Hi 65–130 dB	
Max HOLD	yes	
Data HOLD	yes	
Analogue AC/DC output to analyzer or recorder	yes	
IEC 651 Type 2 standard	yes	
Built-in calibration check	yes	
Accuracy at 94 dB	1.5 dB	
Operation temperature	0 °C to +40 °C	
Operation humidity	< 80 % RH	
		PROPERTIES
		· For quick check of sound level · Standard IEC 651 type 2

TECHNICAL DATA	FGD 1	PROPERTIES
		· 40 cm gooseneck detector
Sensitivity	50 ppm	· Visual leak detection by LED indicators
Sensor type	Low power semi-conductor	· Precision sensor detects even the smallest leaks
Warm-up time	approx. 60 sec	· Fast response of less than two seconds
Response time	< 2 sec	· Includes earphone jack
Duty cycle	continuous	
Probe length	40 cm	
Power supply	3 x C Alkaline	
Operating time	8 h	
Alarm	visible and audible	
Size	221 x 72 x 46 mm	
Weight	498 g	

SUPPLIED WITH

ART.-NO. 800470

- Batteries

FT 1300-1 / FT 1300-2 Professional K-Type Thermometers with single and dual input

» **Trades and tasks:** Temperature measurements of liquid construction materials like asphalt, isolation checks, measurements in the HVAC branch, energy supply, industrial and laboratory application.



TECHNICAL DATA	FT 1300-1	FT 1300-2
ART.-NO.	800400	800410
Scanfunction	1 measurement	2 measurements simultaneously or temperature difference
Sampling rate	2.5 x per second	2.5 x per second
Accuracy	± 0,5 % / ± 1 °C	± 0,5 % / ± 1 °C
Display resolution	0.1 °C / 1 °C	0.1 °C / 1 °C
Temperature range	-50 °C to +1300 °C	-50 °C to +1300 °C
Measuring units	°C / °F / K	°C / °F / K
Dimensions	162 x 76 x 39 mm	162 x 76 x 39 mm
Weight	0.21 kg	0.21 kg
Power supply	Alkaline batteries	Alkaline batteries

SUPPLIED WITH	FT 1300-1 & FT 1300-2
	<ul style="list-style-type: none"> Flexible wire probe TP-300 Set of batteries Case
FEATURES	<ul style="list-style-type: none"> Indication of maximum value (MAX) Data HOLD function Large display (45 mm) with illumination

FT 1000-Pocket Digital Thermometer

» **Trades and tasks:** Temperature measurement of liquids and soft materials.



TECHNICAL DATA	FT 1000-POCKET
Temperature range	-20 °C to +1000 °C
Accuracy	± 3 %
HOLD function	yes
Automatic shut-off	yes
Battery status indicator	yes
Dimensions	117 x 65 x 24 mm
Weight	0.16 kg
Power supply	Alkaline batteries
FEATURES	<ul style="list-style-type: none"> Handy thermometer with immersion probe Pocket-size, light weight, easy to operate
SUPPLIED WITH	<ul style="list-style-type: none"> Set of batteries Incorporated all-purpose probe

FMM 5 5-in-1 Digital Multimeter

» **Trades and tasks:** Universal measuring device for DC and AC voltage, DC current resistance, transistor hFE diode and continuity test, light (luminosity), sound, humidity, temperature overload protection.



SUPPLIED WITH
ART.-NO. 800600
<ul style="list-style-type: none"> All-purpose probe TP-500 Set of batteries Case Testing cable

TECHNICAL DATA	FMM 5		
Multimeter	Max. Range	Resolution	Accuracy
Voltage DC	600 V	0.1 mV	± 0.5 % ± 2*
Voltage AC	600 V	100 mV	± 1.2 % ± 10*
Current DC	10 A	0.1 µA	± 1.0 % ± 2*
Resistance	20 mΩ	0.1 Ω	± 0.8 % ± 2*
Environment	Max. Range	Resolution	Accuracy
Light (luminosity)	20,000 Lux	0.1 Lux	± 0.5 % ± 10*
Sound	100 dB	0.1 dB	± 3.5 dB
Humidity	95 % RH	0.1 % RH	± 5.0 % RH
Temperature	-20 °C to +200 °C	0.1 °C	± 3.0 % ± 1*
	-20 °C to +1300 °C	0.1 °C	± 3.0 % ± 5*

* numerical

Accessories for Environmental Measuring Equipment

OUTLINE					
Accessoires	Function	Length	Temperature range	suitable for	ART.-NO.
TP-300	Flexible wire probe	100 cm	-50 °C to +300 °C	FT1300-1, -2, FMM5	800900
TP-500	All-purpose probe (metal tip length 7 mm)	85 cm	-50 °C to +900 °C	FT1300-1, -2, FMM5	800901
TP-550	All-purpose probe (metal tip length 15.5 cm)	94 cm	-50 °C to +900 °C	FT1300-1, -2, FMM5	800906
NR-88B	Flexible steel probe	100 cm	-50 °C to +450 °C	FT1300-1, -2, FMM5	800902
NR-31B	Surface temperature probe	12 cm	-50 °C to +450 °C	FT1300-1, -2, FMM5	800903
NR-33	Right angle surface temperature probe	34 cm	-50 °C to +450 °C	FT1300-1, -2, FMM5	800904
NR-38	Air temperature probe	21 cm	-50 °C to +800 °C	FT1300-1, -2, FMM5	800905



ACCESSORIES

OUR INVITATION:
ALWAYS NEW CHALLENGES TO
CONQUER.

The versatility of measuring instruments from geo-FENNEL can be increased significantly by using our wide range of precisely coordinated surveying accessories. Regardless of the profession or application, the know-how from many decades of experience in the field of measurement technology and surveying resides in our products.



Wall adapter WS 1



WALL ADAPTER WS 1

ART.-NO. 290560

- Adapter for clamp connection at wall track for dropped ceiling installation
- Metal surface to connect with magnetic mount of line lasers
- Line laser can be moved up and down for correct height positioning



Floor-to-Ceiling Pillar KS 3



FLOOR-TO-CEILING PILLAR KS 3

ART.-NO. 520100

- Floor-to-ceiling pillar (1-leg tripod) to be fixed between floor and ceiling
- Solid construction
- 5 sections with metal thread
- Maximal length 3,40 m
- 5/8" and 1/4" adapter
- Supplied with carrying bag
- The individual poles are equipped with 5/8" threads. This enables them to be screwed onto tripods, if no ceiling surface is available.

360° Fine adjustment bracket Just set



- » Allows a smooth 360° rotation and fine adjustment for rotating and line lasers. Final position can be clamped. Aperture for instruments with plumb down beam.

360° FINE ADJUSTMENT BRACKET

ART.-NO. 290760

- Universal mount
- 5/8" threads (bottom female, top male)

WH 1 / WH 2 Wall and Ceiling Mount

- » Robust mount for use on walls and ceilings



» WH 1

» WH 2

Example 1

WH 1

ART.-NO. 290600

- Robust mount for use on walls and ceilings
- Ideal for use indoors e.g. setting out suspended ceilings
- Cm/inch-graduation
- Precise adjustment / alignment with large slow motion wheel
- Incl. bag

WH 2

ART.-NO. 290610

- Same as WH 1 but all metal.
- Especially solid
- Platform size 150 x 95 mm for fixing larger instruments
- Suitable for all geo-FENNEL-lasers

Grade Mount



GRADE MOUNT

ART.-NO. 290700

- For rotating and line lasers with manual function
- For setting slopes between 0 - 90° for laser levels in manual mode
- Robust construction
- Graduated slow motion screw
- Fits any tripod with 5/8" thread
- With bubble

ADAPTER FOR S-DIGIT MINI



- » Adapter for connecting S-Digit mini (see page 92) to the Grade Mount.

Allows higher accuracy to be achieved.



» Example

Adapter 5814



ADAPTER 5814

ART.-NO. 290550

- Adapter 5/8" to 1/4"
- Converts a standard 5/8" tripod into a 1/4" fitting

ADAPTER FOR S-DIGIT MINI +

ART.-NO. 290750

SH2 Scaffold clamp holder



SH2 SCAFFOLD CLAMP HOLDER

ART.-NO. 320610

- For quick centring over the linchpin.
- For all rotating lasers, however, with special marks for use with FL 275/510-Trackinglasers.

Laser glasses



LASER GLASSES RED

ART.-NO. 253000

LASER GLASSES GREEN

ART.-NO. 253001

- Laser intensive glasses for better visibility of laser beam

Magnetic Target LS 307



MAGNETIC TARGET LS 307 RED

ART.-NO. 290500

MAGNETIC TARGET LS 307 GREEN

ART.-NO. 290501

- Magnetic Target with cm/inch graduation



Adapter FCA

» Adapter to facilitate facade construction and monitoring with rotating lasers.

» Adapters FCA-L for rotating lasers and FCA-E for receivers are fixed on the wall. Rotating laser plane and receiver on-level mark are to be set up at same distance to the wall by means of integrated cm / mm-graduation at both adapters.

Like this structural facings can be mounted exactly parallel.

Dedicated for use with FL 270VA-Tracking and FL 510HV-G Tracking in combination with receiver FR 77-MM Tracking.



» FCA-L



» FCA-E



FCA-L FOR LASER	FCA-E FOR RECEIVER
ART.-NO. 290820	ART.-NO. 290830

FS 10 (1.88 m) FS 12 (2.44 m) Elevating Tripod



» FS 10

» FS 12

FS 10

ART.-NO. 302000

- Rotating head
- 67–188 cm (incl. 30 cm centre column)
- 2.3 kg

- Lightweight elevating tripod made of aluminium for instruments with 5/8" thread
- Incorporated circular bubble
- Incl. bag

FS 12

ART.-NO. 303000

- Rotating head
- 73–244 cm (incl. 30 cm centre column)
- 2.65 kg

- Lightweight elevating tripod made of aluminium for instruments with 5/8" thread
- Incorporated circular bubble
- Incl. bag

FS 13 (2.95 m) Elevating Tripod

FS 13

ART.-NO. 304000

- Rotating head
- 89–295 cm (incl. 120 cm centre column)
- 2.9 kg

- Lightweight elevating tripod made of aluminium for instruments with 5/8" thread
- Wide working range for setting out 1 m datum mark and working at heights of about 3 m
- Adjustable range of elevating column 54 cm and of sliding column 59 cm
- Carrying handle
- Incorporated bubble
- Incl. bag



FS 14 (1.61m) Camera Tripod

FS 14

ART.-NO. 301000

- Rotating head
- 57–161 cm
- 1.4 kg

- Lightweight elevating tripod made of aluminium for instruments with 1/4" thread
- Ideal as accessory for laser distance meter
- Incl. bag



FS 30-XS (3.00 m) Elevating Tripod



FS 30-XS

ART.-NO. 165

- Column / Flat head
- 101–300 cm
- 5.7 kg

- Lightweight elevating tripod made of aluminium for instruments with 5/8" thread
- Adjustable range of centre column 36 cm
- Fine crank drive for exact adjustment
- Upper column length 43 cm
- Quick clamp system, shoulder carrying strap
- Struts between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Retracted length 1.1 m for convenient transport
- Built-in circular bubble

Tripod Floor Stand

TRIPOD FLOOR STAND

ART.-NO. 170

- Protect your floor surface and ensure your tripod is secure.
- Manufactured from aluminium and foldable for easy transportation.



FS 40 (1.86 m) Aluminium Tripod

FS 40
ART.-NO. 150
<ul style="list-style-type: none"> · Column / Flat head · 95–186 cm (incl. 30 cm centre column) · 3.2 kg

- Adjustable range of centre column 30 cm
- Quick clamp system
- Incl. shoulder carrying strap
- 5/8" Thread

FS 30-S (1.38 m) Elevating Tripod

FS 30-S
ART.-NO. 155
<ul style="list-style-type: none"> · Column / Flat head · 68–138 cm · 4.2 kg

- Short tripod ideal for cutting checks
- Adjustable range of centre column 35 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Built-in circular bubble
- 5/8" Thread

FS 30-M (2.00 m) Elevating Tripod

FS 30-M
ART.-NO. 158
<ul style="list-style-type: none"> · Column / Flat head · 80–200 cm · 5.2 kg

- Adjustable range of centre column 39 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Built-in circular bubble
- 5/8" Thread

FS 30-L (2.85 m) Elevating Tripod

FS 30-L
ART.-NO. 156
<ul style="list-style-type: none"> · Column / Flat head · 95–285 cm · 8.2 kg

- Adjustable range of centre column 40 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Built-in circular bubble
- Continuous opening for instruments with plumb down facility
- 5/8" Thread

FS 24 FS 24 W/S (1.70 m) Wooden Tripod



FS 24
ART.-NO. 154
<ul style="list-style-type: none"> · Flat head · 105–170 cm · 5.4 kg

- Robust wooden tripod for levels, theodolites and rotating lasers
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 140 mm
- 5/8" Thread

FS 24 W/S
ART.-NO. 154 W/S
<ul style="list-style-type: none"> · Same as FS 24 tripod, however, with screw clamp system

FS 24-M W/S (1.70 m) Wooden tripod



FS 24-M W/S
ARTIKEL-NO. 162 W/S
<ul style="list-style-type: none"> · Flat head Ø 17 cm · 105 – 170 cm · 5/8" Thread · 5.5 kg

- » **FS 24-M W/S:**
Robust wooden tripod with large diameter head of 17 cm and screw clamp system making it a secure platform for Total Stations, theodolites and lasers

- Robust wooden tripod for surveying instruments
- Screw clamp system
- Flat head
- Diameter of tripod head 170 mm
- Shoulder carrying strap

FS 50-M (2.20 m) Elevating Tripod

FS 50-M
ART.-NO. 164
<ul style="list-style-type: none"> · Column / Flat head · 80–220 cm · 7.2 kg

- Adjustable range of centre column 108 cm
- Struts between tripod legs for increased stability
- Central clamping of the struts
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Built-in circular bubble
- 5/8" Thread

FS 50-L (2.90 m) Elevating Tripod

FS 50-L
ART.-NO. 166
<ul style="list-style-type: none"> · Column / Flat head · 114–290 cm · 8.6 kg

- Adjustable range of centre column 108 cm
- Struts between tripod legs for increased stability
- Central clamping of the struts
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Side wheel for comfortable connection of instruments with 5/8" thread
- Built-in circular bubble

FS 30-XL (3.80 m) Elevating Tripod

FS 30-XL
ART.-NO. 159
<ul style="list-style-type: none"> · Column / Flat head · 166–380 cm · 15.6 kg

- Adjustable range of centre column 104 cm
- Load up to 20.0 kg
- Combined quick and screw clamp system for extra stability
- Struts between tripod legs
- Retracted length 1.79 m for comfortable transport (tripod)
- Made of aluminium (centre column) and fibre glass (tripod)
- Built-in circular bubble
- 5/8" Thread

Builders' Tripod BT (1.47 m) Aluminium tripod



BUILDERS TRIPOD BT
ART.-NO. 161
<ul style="list-style-type: none"> · Flat head · 92–147 cm · 3.2 kg

- For automatic levels
- Quick clamp system
- Flat head
- Shoulder carrying strap
- 5/8" Thread

FS 20 FS 20-D (1.65 m) Aluminium Tripods



FS 20
ART.-NO. 151
<ul style="list-style-type: none"> · Flathead · 105 – 165 cm · 3.5 kg

- Aluminium Tripod FS 20**
- For light measuring instruments such as automatic levels
 - Quick clamp system
 - Flat head
 - Shoulder carrying strap
 - Diameter of tripod head 123 mm
 - 5/8" Thread

FS 20-D
ART.-NO. 157
<ul style="list-style-type: none"> · Domed head · 105 – 165 cm · 3.5 kg

- Aluminium Tripod FS 20-D**
- Same as FS 20 tripod, however, with domed head

FS 23, FS 23-D FS 23 W/S (1.70 m) Aluminium Tripods



FS 23
ART.-NO. 152
<ul style="list-style-type: none"> · Flat head · 105–170 cm · 5.1 kg

- Aluminium Tripods FS 23**
- Ideal for all measuring instruments
 - Quick clamp system
 - Flat head
 - Shoulder carrying strap
 - Diameter of tripod head 143 mm
 - 5/8" Thread

FS 23-D (DOMED HEAD)
ART.-NO. 153

- Aluminium Tripod FS 23-D**
- Same as FS 23 tripod, however, with domed head

FS 23 W/S (FLATHEAD)
ART.-NO. 152 W/S

- Aluminiumstativ FS 23 W/S**
- Same as FS 23 tripod, however, with screw clamp system

» High quality elevating tripods designed to be compact and durable – a stable platform for any rotating laser, even in adverse weather conditions.

TN14



TN 14
ART-NO. 484

- A high quality levelling staff made of strong aluminium tubes available in 4 m and 5 m
- Silver anodised finish
- Front face cm-E graduation throughout total length
- Rear face graduation in mm for height measurements
- Slit to fix LR 7 Rod level
- Secure snap-in at each meter

TN15



TN 15
ART-NO. 485

- A high quality levelling staff made of strong aluminium tubes available in 4 m and 5 m
- Silver anodised finish
- Front face cm-E graduation throughout total length
- Rear face graduation in mm for height measurements
- Slit to fix LR 7 Rod level
- Secure snap-in at each meter

TN 20-Kombi



TN 20-KOMBI
ART-NO. 482

- Made of strong aluminium tubes
- Graduation in mm
- Length 2.40 m
- Lower part adjustable in height for zero setting
- Including circular bubble and carrying case
- Including adjustable clamp for receiver
- Weight 0.9 kg
- Ideal for use with rotating laser levels
- Correct sign reading

BS 15-0

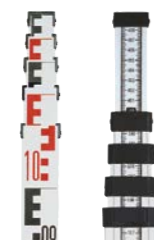


BS 15-0
ART-NO. 486 BS

A quality levelling staff for laser levels

- Front face cm-E graduation
- Rear face graduated in mm with "0" beginning at the bottom

TN 15-0



TN 15-0
ART-NO. 486

High quality levelling staff similar to TN 15, except:

- Rear face graduated in mm with "0" beginning at the bottom

Optional accessories

ROD LEVEL LR7 FOR TN 14/15/15-0
ART-NO. 370

- Rod Level LR7
- For TN 14, 15, 15-0, BS 15-0
- Adjustable



CASE FOR TN 14/15/15-0
ART-NO. 480

- Nylon case with shoulder carrying strap (w/o picture)

RPT 1 Ranging Pole Tripod



RPT 1
ART-NO. 820

- Extendable tripod legs 77 – 128 cm, with secure clamps
- Weight 1.25 kg
- Clamp with adjustable ball-and-socket joint
- Supplied with carrying case

RP 2 Metal Ranging Pole

6X RP 2
ART-NO. 800

- Each pole consists of 2 sections of 1 m length screwed together to make one pole of 2 m
- Universal 5/8" fitting
- White / red sections
- Metal tip
- Supplied as a set of 6 poles in a carrying bag

1 M EXTENSION FOR RP 2
ART-NO. 810

- 1 m section for extending the ranging pole as required
- White / red colour
- 5/8" thread

Marking Spray

- » For permanent wall / floor marking.
- » Professional marking for building and road construction, civil engineering, construction sites, surveying jobs.



MARKING SPRAY

- For fast, clean and precise marking of asphalt, concrete, masonry, stone pavement, wood, earth and many other substrates
- Markings remain strongly visible up to 9 months
- Marking and sticking to any surface even if it is wet
- Reliable even at sub-zero temperatures (up to -20 °C)
- Patented one-hand safety cap with easy-touch release
- Guaranteed marking without painted fingers
- Colour coordinated cap
- Also easy to apply with gloves
- Self-cleaning system, can be 100 % emptied by spraying
- Environmentally friendly and non-hazardous to health

COLOURS	
ART-NO. fluo orange	901
ART-NO. fluo red	902
ART-NO. fluo blue	903
ART-NO. fluo yellow	904
ART-NO. fluo green	905
ART-NO. fluo pink	906
ART-NO. red	911
ART-NO. yellow	913
ART-NO. white	915

- Content 500 ml
- Sales packing 12 cans per carton

1 Patented one-hand safety cap with easy-touch release



Marking Wheel

- » Marking Wheel for accurate marking with GEO-MARKER Marking Spray.
- » No need to remove safety cap for use with marking wheel.

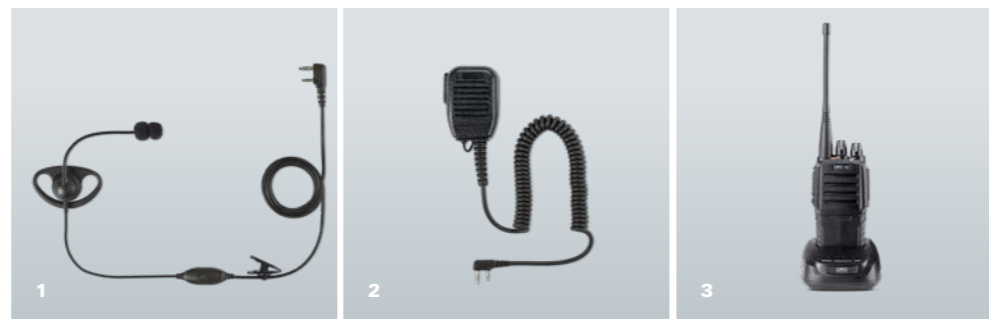


MARKING WHEEL
ART-NO. 940

- Length 83 cm
- Weight 0.6 kg

F6 Two-way Radio

» Robust and powerful PMR 446 two-way radio for professional use.



- 1 F6-EM earphone / clip microphone
- 2 F6-HM hand microphone
- 3 Charger

TECHNICAL DATA	F6
RF output power	0.5 W
Frequency range	446.000 – 446.100 MHz
Channels	16
Audio output	1 W
Accu / operating time	12 V Li-Po 1300 mAh / 12 h – 30 h
Temperature range	-25 °C to +55 °C
Dust / water protection	IP 54
Shock / vibration	MIL STD 810 C/D/E & TIA/EIA 603
Working ranges	
outside, open terrain	5 km
outside, area between buildings	3 km

OPTIONAL ACCESSORIES	OPTIONAL ACCESSORIES
F6-HM MICROPHONE	F6-EM EARPHONE
ART.-NO. 870100	ART.-NO. 870150
· F6-HM hand microphone with jacket clip	· F6-EM earphone / clip microphone

FEATURES
<ul style="list-style-type: none"> · Clear audio quality · Automatic noise reduction · TOT Time-out timer to stop transmitting automatically · Monitoring function · DCS/CTCSS encoder and decoder prevents interference in the same frequency · Housing made of die-cast and high-resistant plastic · Powerful lithium polymer rechargeable battery · Battery saving mode · Channel annunciation in English language · LED shows receipt, transmission and battery status · European wide licence and toll-free usable

SUPPLIED WITH
ART.-NO. 870000
<ul style="list-style-type: none"> · Two-way radio · Rechargeable battery · Charger · Belt clip · Hand strip

FMD 60 Metal Detector

» **Easy to use metal detector.**

- Designed for the detection and localisation of manhole covers, site marks, pipes etc.
- Perfect for site security by detecting hidden metallic objects.



FEATURES
HEADPHONE FH 1 (OPTIONAL)
ART.-NO. 800810
<ul style="list-style-type: none"> · For the use of FMD 60 in loud surroundings · Padded earcups and headband

TECHNICAL DATA	FMD 60
Measuring depth	60 cm
Operating time	30 h
Measuring disc	Ø 24 cm
Dust / water protection measuring disc	IP 67
Weight	2.0 kg
Weight	3.3 kg with case and box

FEATURES
<ul style="list-style-type: none"> · Detection of all kinds of metals · Handle adjustable, length 114 – 139 cm · Headphone jack
SUPPLIED WITH
ART.-NO. 800800
<ul style="list-style-type: none"> · 8 x AA alkaline batteries · Carrying bag



Mixer FM 1010 1010 W

» Our mixers – suitable for all applications. Ergonomic design, strong performance. Powerful mixers for paint, mortar, concrete, etc. Ideally suited for construction sites.



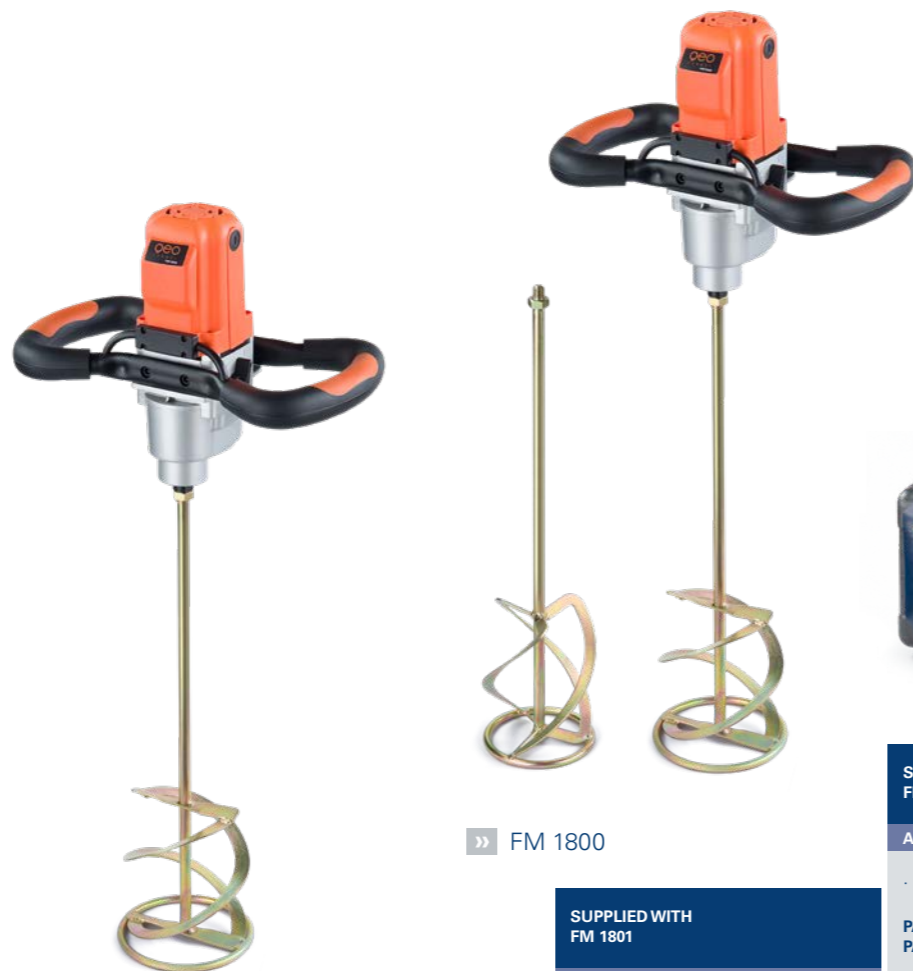
**SUPPLIED WITH
PADDLE H2-120 MM**

ART.-NO. M800500

- E. g. for mortar, concrete, paint
- Paddle diameter 120 mm x length 600 mm
- Stirring capacity 10–25 kg

TECHNICAL DATA	FM 1010
Power	1010 W
Over-voltage protection	yes
Weight	6 kg
Speed adjustable	150–500 rpm

Mixer FM 1800 and FM 1801 1800 W



» FM 1801

» FM 1800



**SUPPLIED WITH
FM 1800**

ART.-NO. M800507

- Carrying case

**SUPPLIED WITH
FM 1801**

ART.-NO. M800508

**PADDLE H2-140 MM
PADDLE H3-120 MM**

**SUPPLIED WITH
FM 1801**

ART.-NO. M800508

PADDLE H2-140 MM

TECHNICAL DATA	FM 1800 & 1801
Power	1800 W
Over-voltage protection	yes
Weight	6 kg
Speed adjustable	150–300 and 300–650 rpm

Paddles for mixers FM 1010 and FM 1800

» For sticky and viscous materials: tile adhesive, bonding mortar, joint compound, ready-mixed plaster, floor screed, cement compounds, fillers, etc.



PADDLE H2	CAPACITY	DIAMETER	LENGTH	THREAD	
H2 120G	15 – 25 kg	120 mm	600 mm	M14	ART.-NO. M800590
H2 140G	30 – 50 kg	140 mm	600 mm	M14	ART.-NO. M800591
H2 160G	35 – 60 kg	160 mm	600 mm	M14	ART.-NO. M800592

» For liquid, very viscous and fibrous materials in large quantities: wall paint, varnish, glaze, joint sealing compound, cements, lime, plaster, concrete, filler, floor screed, etc.



PADDLE H3	CAPACITY	DIAMETER	LENGTH	THREAD	
H3 L120G	15 – 25 kg	120 mm	600 mm	M14	ART.-NO. M800597
H3 L140G	25 – 35 kg	140 mm	600 mm	M14	ART.-NO. M800596
H3 L160G	35 - 60 kg	160 mm	600 mm	M14	ART.-NO. M800599

» For liquid materials: wall paint, emulsion paint, tile adhesive, glue, wallpaper paste, etc.



PADDLE H4	CAPACITY	DIAMETER	LENGTH	THREAD	
H4 114G	15 – 40 kg	120 mm	600 mm	M14	ART.-NO. M800598

» For liquid materials: wall paint, emulsion paint, paste, bitumen, sludge, joint sealing compound, filler, bonding agent, etc.



PADDLE H7	CAPACITY	DIAMETER	LENGTH	THREAD	
H7 100G	15 – 25 kg	100 mm	600 mm	M14	ART.-NO. M800594
H7 120G	20 – 30 kg	120 mm	600 mm	M14	ART.-NO. M800595

» For thin-bed adhesives and for larger volumes of liquid materials.



PADDLE DD 140	CAPACITY	DIAMETER	LENGTH	THREAD	
DD 140	20 – 40 kg	140 mm	600 mm	M14	ART.-NO. M800593

QUALITY & SERVICE

INFORMATION AND SUPPORT





Benchmark for measuring. Laser measuring tools and surveying equipment supplied by geo-FENNEL.

geo-FENNEL – a valued name in the world of surveying.

» Located in Hesse, Germany we are a mid-sized company which has gained a good reputation as a supplier for laser measuring technology and surveying equipment. Today we are in the front row when users ask for laser measuring devices. Our products are recognised all over the world and we currently deliver them to more than 70 countries worldwide. Our indispensable company philosophy is to provide our customers with innovative, precise and reliable products and to offer first class service. High quality, a good and fair price-performance ratio as well as fast delivery count among our principles. Our cooperative partnership with our customers is essential for us and our international orientation is a main strategy.

Our extensive experience has convinced customers, for many years.

Our quality standard

» geo-FENNEL instruments are tested and calibrated using tools and equipment traceable through DKD* accreditation back to national standards. These test procedures conform to DIN ISO standards.

*DKD = German Calibration Office

DKD

Our product range

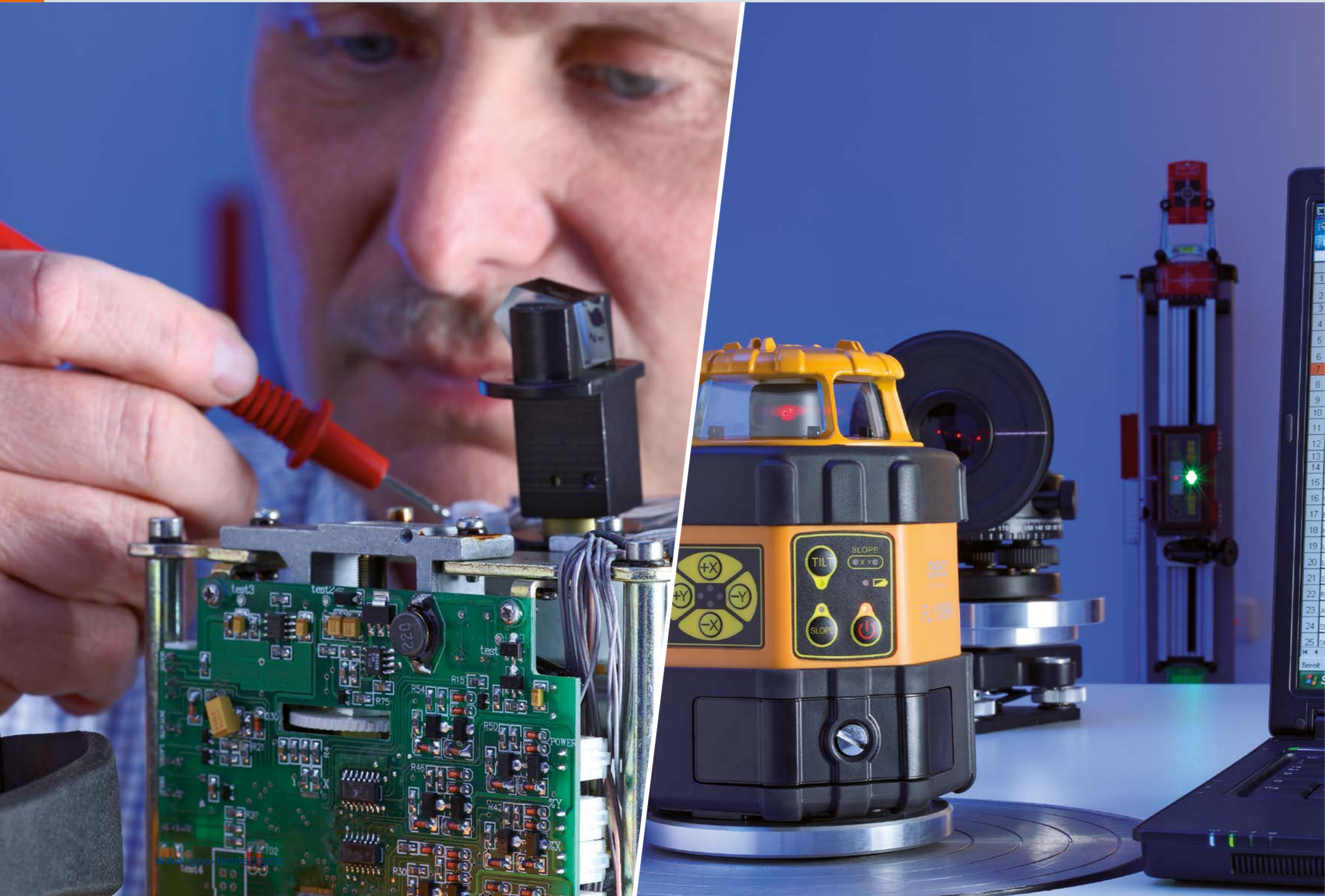
» Our product range includes:

Laser Surveying Instruments
- Rotating Lasers
- Cross and Line Lasers
- Pipe Lasers
- Laser Distance Meters

Classic Surveying Instruments
- Automatic Levels
- Theodolites
- Total stations
- GPS Systems

Ancillary Products
Measuring Instruments
Environmental Measuring Equipment





Quality that is measurable. Enhanced by our commitment to service and support.

Service is our pledge.

» Many can sell but only a few can back this up with professional advice and extensive service facilities. At geo-FENNEL, our products and services are available at all times, home and abroad and our fully trained personnel are ready to support you with advice at any time. Whether you have questions concerning application, technology or sales we are committed to provide the assistance you require.

State-of-the-art manufacturing technology, the care and continuous training of our employees and our efficient work ethic guarantee you a consistent high level of after sales service. Should a repair become necessary, our repair and spare part departments are ready to help – this applies to our complete product range.

Guaranteed First Class.

» We strive to provide the user measuring instruments that offer all the advantages which characterize geo-FENNEL products: easy-to-use, cost effective, accurate measuring performance under almost all conditions with the highest reliability.

We offer 2 years guarantee on all products.

However, in the unlikely event that a problem should occur, simply contact your dealer. He will ensure that the product is quickly restored to full working order, or will replace it with a new one.

Quick and easy.

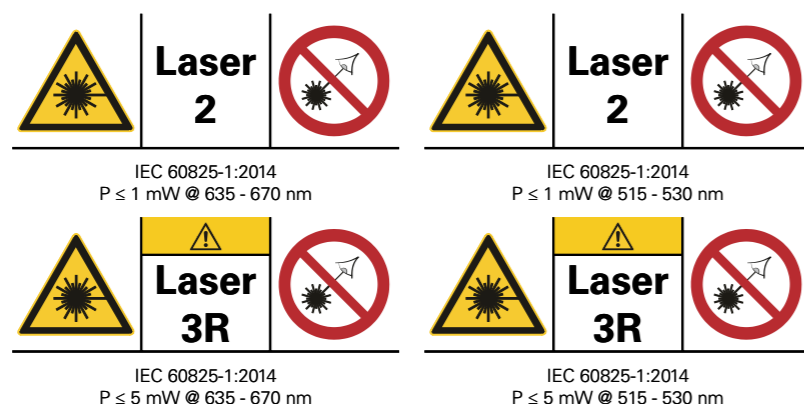


Laser classification according to DIN EN 60825-1:2014

» geo-FENNEL laser products are classified into either laser class 2 or 3R.

Their laser class is specified in our technical data.

Please refer to the latest version.



» Instruments with laser class 2

The laser product can be used without further safety precautions (the relevant safety instructions are described in our user manuals). The eye is protected by the normal human aversion response and the blinking reflex of the human eye to a bright radiant source.

GEO-FENNEL CROSS LINE LASERS

The complete range is classified in laser class 2 and offered in 4 visibility classes:		
Standard	e. g. Square Liner II	Working range visibility 10 m
HP (High Power)	e. g. Geo3x HP	Working range visibility 20 m
SP (Selection PRO)	e. g. Geo6X SP	Working range visibility 30 m
SP (Selection PRO) – Green	e. g. FLG 66-Xtreme Green SP	Working range visibility 40 m

GEO-FENNEL ROTATING LASERS

Our complete range is available within the laser class 2 classification.

» Instruments with laser class 3R

The legal requirement for using laser class 3R products varies from country to country. The user is responsible for compliance to the national standards and regulations. The use of laser class 3R products may require registration with a local authority and the appointment of a health and safety operative.

Special protection measures may be necessary as laser class 3R products have a higher laser output power. The positive effect of this is to increase the performance of the products for long range reception with receivers and improved visibility when using without a receiver. geo-FENNEL offers various rotating and pipe lasers with laser class 3R.

geo-FENNEL – Product functions

» geo-FENNEL lasers have many features which help to carry out safe and comfortable work on construction sites. Some of these features are explained below.



» Automatic TILT Function

This is a measurement safety function. If the level of the instrument is disturbed it will re-level itself (within the self-levelling range of 5°). If the level is disturbed at a large range (for example if a tripod leg has moved) a height offset can be caused. This will be avoided by the TILT function. The instrument will shut off even within the self-levelling range. This function is activated automatically after the self-levelling procedure is completed.



» Vibration-Wind-Security (VWS)

This is also a measurement safety function. It allows continuous operation during periods of vibration and wind. If a significant movement occurs the laser stops rotating and the laser beam is flashing. The VWS-Mode is combined with the automatic TILT Function.



» Remote control function

The remote control function can be switched off to avoid interference from other instruments that are being used on the same construction site.



» Zonal control

Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections. Furthermore it greatly increases site safety.



» Li-Ion battery technology

This technology has great advantages when compared against alkaline and NiMH rechargeable batteries:

- 100 % power until fully discharged
- Top-up charging possible as no memory effect will occur
- Low self discharge then not in use



» PowerSwitch Technology

Rotating lasers with our unique PowerSwitch technology have the power of a class 3R laser but in a certified class 2 laser. The result is no output loss of working range or visibility of the laser line.



» Tracking Function

The laser plane of the rotating laser is automatically centered to the receiver „on-grade“ position. This makes alignment tasks over long distances extremely easy, e.g. while doing scaffolding work.

geo-FENNEL knowledge base – useful information about laser measuring technology

» As specialists in the field of laser measuring equipment we would like our customers to benefit from our many years of experience, providing you with useful explanations relating to various topics in the field of laser technology. This will make using our instruments easier, safer and a more profitable experience.

IP Protection class according to DIN EN 60529

» The degree of protection of an instrument's housing is defined by the indicator "IP" (Ingress Protection) followed by a two-digit code.

- First digit: Protection against solid particles
- Second digit: Protection against water



FIRST DIGIT – PROTECTION AGAINST SOLID PARTICLES	SECOND DIGIT – PROTECTION AGAINST WATER
0 No protection	0 No protection
1 Protected against solid particles with a diameter greater than 50 mm	1 Protected against dripping water
2 Protected against solid particles with diameter greater than 12 mm	2 Protected against dripping water, when the housing is tilted at an angle of up to 15°
3 Protected against solid particles with diameter greater than 2.5 mm	3 Protected against sprayed water up to an angle of 60°
4 Protected against solid particles with diameter greater than 1 mm	4 Protected against splashed water from any direction
5 Protected against dust that would interfere with the operation of the equipment	5 Protected against water projected from a nozzle
6 Dust tight	6 Protected against water projected from powerful jets from any direction
	7 Protected against temporary immersion
	8 Protected against permanent submersion in water

geo-FENNEL F6 Two-way Radio

» The F6 is a PMR 446 channel (Private Mobile Radio) licence free Two-way Radio and works between the frequency band 446–446.1 MHz. The PMR (Private Mobile Radio) 446 service has been introduced following the adoption by the CEPT/ERC1 of the Decisions ERC/DEC/(98) 25, 26 and 27.

» This type of radio can be used by anyone anywhere in the EU registration area totally fee free. They can have a maximum RF Output power of 500 mW and have an approx. maximum range of 5 km.

SET ASIDE THE BAND 446.0 - 446.1 MHz FOR A PMR 446 SERVICE, WITH A CHANNEL PLAN BASED ON 12,5 KHZ SPACING:	
Channel 1 = 446,00625 MHz	Channel 5 = 446,05625 MHz
Channel 2 = 446,01875 MHz	Channel 6 = 446,06875 MHz
Channel 3 = 446,03125 MHz	Channel 7 = 446,08125 MHz
Channel 4 = 446,04375 MHz	Channel 8 = 446,09375 MHz

Lasers with red or green laser diode

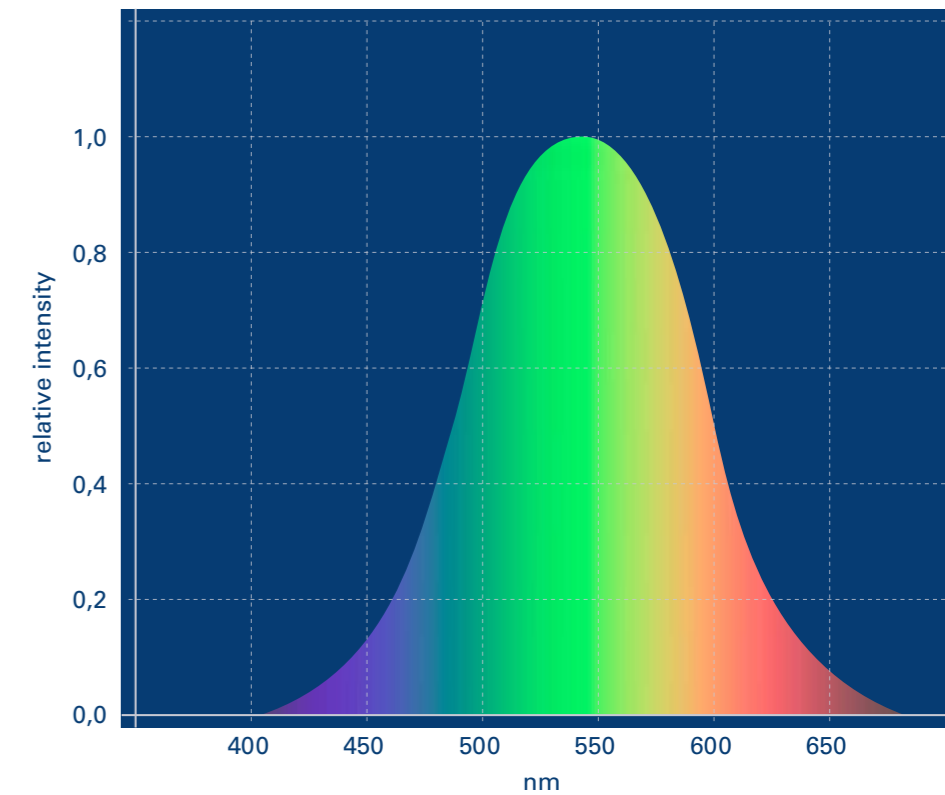
» The human eye can see the different wavelengths (measuring unit 'nm') of the visible colour spectrum in different intensities. The optimum is at 555 nm. Green light is situated in the middle of this range and can be perceived much higher compared to red light.

» Therefore green lasers have benefits when used without a receiver. The visibility is much better when working in a bright environment, over long distances or on dark surfaces.

Previously the disadvantages of green lasers were a limited temperature range, shorter battery life, the laser class classification, as well as the significantly higher price.

geo-FENNEL have now introduced an innovation in the field of rotating lasers: The rotating lasers FLG 245HV-Green and FLG 245HV-GREEN TRACKING are equipped with advanced laser diode technology offering the following advantages:

- Fully usable temperature range of -20 °C to +50 ° C (the same as red laser diode)
- Classification in laser class 2 due to special control electronics
- Equal or slightly better visibility compared to the previous laser class 3R version.
- Due to the laser class 2 classification the laser can be used without any regulatory complications on all construction sites.





maxi Sales Display

MAXI	
ART.-NO. 111000	
Dimensions	<ul style="list-style-type: none"> Made of metal with a large glass door Wooden presentation area for 6 products, which can be secured underneath with a 5/8" tripod screw
· Width	100 cm
· Depth	50 cm
· Height	200 cm
	<ul style="list-style-type: none"> 1 small glass display (left), lockable 1 shelf in the bottom cabinet which is also lockable On left and right side tripods, levelling rods and floor-to-ceiling pillar KS 3 can be positioned

mini Sales Display

MINI	
ART.-NO. 110000	
Dimensions	<ul style="list-style-type: none"> Metal Housing On wooden presentation area 3 products can be fixed with 5/8" tripod screw
· Width	50 cm
· Depth	40 cm
· Height	50 cm
	<ul style="list-style-type: none"> Display with slideable glass door for arrangement of further products Lockable for security against theft Can be integrated in existing Tegometall shelving system



basic Sales Display

BASIC	
ART.-NO. 110050	
Dimensions	
· Width	50 cm
· Depth	25 cm
· Height	30 cm
	<ul style="list-style-type: none"> Display out of laminated wood



Presentation Systems

- » With geo-FENNEL's new "Target Group Product Presentation System" you can achieve even more success at the point-of-sale!
- » **Why?** Because the presentation system lets you address your target groups on the basis of their individual technical requirements in combination with an attractive presentation of geo-FENNEL products.
 - Product labels give end users the most important product data and information thus promoting independent sale of the devices.
 - With selected product accessories you can achieve cross-selling effects within the various target group presentation systems.
 - Target group presentation systems are available for the following product ranges: Generalist, Drywall Construction, Landscaping and Civil Engineering, Tiling, Painting, and Electrical Work.
 - Of course, it is possible to combine different target group presentation systems.
 - Simply talk to your geo-FENNEL sales representative for more information. He or she will be pleased to give you more details and help you select the right geo-FENNEL target group presentation systems.



» Generalist



» Generalist



» Dry mortarless construction



Precision in measuring. Presence at exhibitions.

» Professional in presentation – geo-FENNEL also supplies posters and wall charts for exhibitions or various lables for sales displays and authorized dealers: Help to reach your customers with the marketing material from geo-FENNEL.

» Banners (roll-up) for exhibitions
Size: 850 x 2,220 mm each



» Poster DIN A1



» Label for authorized dealers
Size: 150 x 108 mm



» Car sticker
Size: 100 x 114 mm





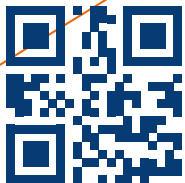
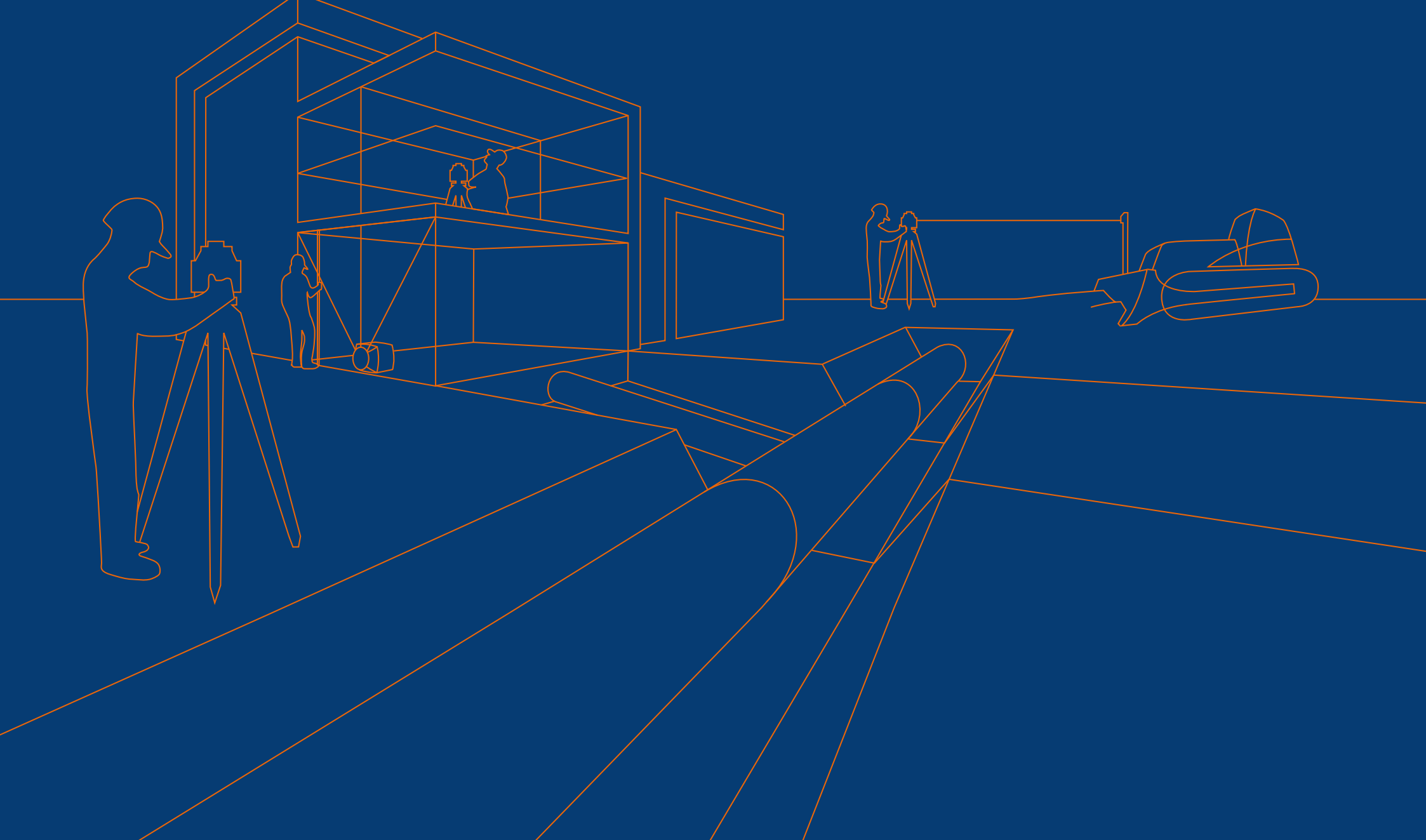
Tailor-made information.

» You know best which special requirements you have for our surveying equipment. For further details, data concerning our products, catalogue downloads and all the latest news and information, please visit our website.



Further information is available at

www.geo-fennel.com



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