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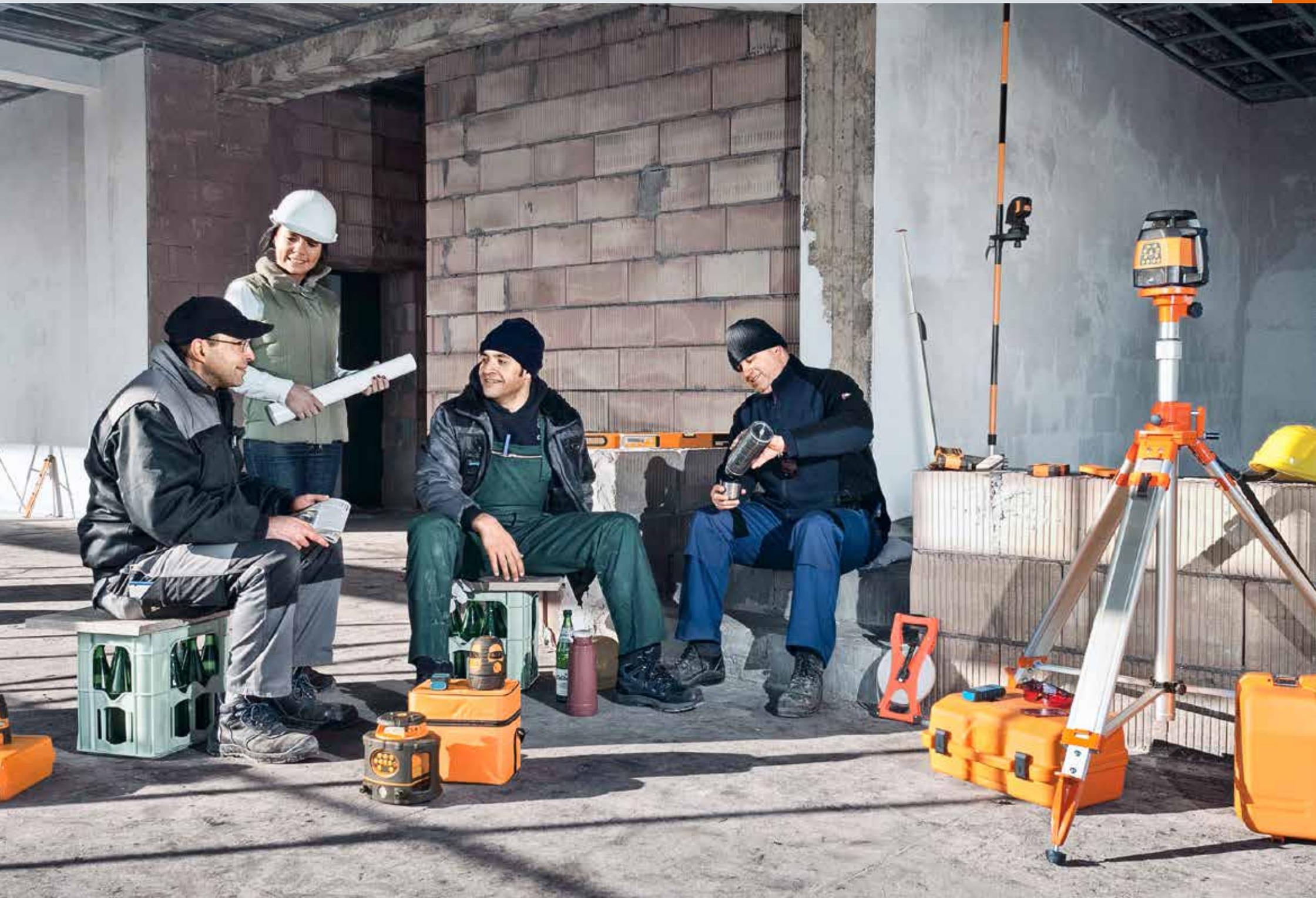
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# Tasks Outline of products

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

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	surface / grade measurement and control	carpet, wood, hard tiles	conduit, trunking, switches, sockets	planning, layout for fixtures and fittings	controls	height construction and fittings	floor, wall	quantity estimation	windows, doors	alignment, measurement, control	sports fields, car parks	walls, doors, windows	paving, paths	posts, fences, beams, structures	balustrade, handrails, edging	drainage	piling, beams, pipes, facades	raised floor for air conditioning	foundations and concrete flooring	bricklaying	masonry, walls	cutting checks				
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 2019

» **Here it is: our geo-FENNEL catalogue 2019** 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](http://www.geo-fennel.com)

### Cross Line Laser



**FL 40-POWERCROSS PLUS SP**  
Page 18



**FLG 40-POWERCROSS PLUS GREEN SP**  
Page 19

### Multi-Line Laser



**GEO6X SP**  
Page 22



**GEO6X GREEN SP**  
Page 23

## Accessories for Line Lasers



**EasyTRACK Plus**  
Page 30

## Dual Grade Laser



**FL 510HV-G TRACKING M**  
Page 54

## Pipe Laser



**FKL 44**  
Page 60

## Receivers for Line Lasers



**FR 75-MM**  
Page 66

## Automatic Level



**GFN 1**  
Page 76



**GFN 10**  
Page 77

## Laser Distance Meter



**GEODIST® 600LR**  
Page 87

# 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.







# CrossPointer5 SP

## 6 reference points plus one laser cross

Selection PRO



» CrossPointer5 SP is a Selection PRO product with special features.

- » Outstanding visibility of the laser lines
- » Combination of a 5 point and cross line laser
- » 6 reference points at 90° to each other
- » Horizontal and vertical lines at 90° to each other



CrossPointer5 SP 1

Intuitive interface 2

Multi-functional mount 3



TECHNICAL DATA		CROSSPOINTERS5 SP	FEATURES	SUPPLIED WITH CROSSPOINTERS5 SP		SET CROSSPOINTERS5 SP + FLOOR-TO-CEILING PILLAR KS3
				ART.-NO. 531500		
Self-levelling range		± 4°	<ul style="list-style-type: none"> <li>· 2 laser lines form a laser cross</li> <li>· 5 laser points: back, left, right, ceiling, floor</li> <li>· Plumbing function</li> <li>· Multi-functional mount</li> <li>· Strong magnets on the base</li> <li>· Strap attachment, rotatable</li> <li>· Use with receiver (optional)</li> <li>· Self-levelling function can be locked for manual use</li> </ul>	<ul style="list-style-type: none"> <li>· Multi-functional mount</li> <li>· Laser glasses</li> <li>· Magnetic target</li> <li>· Set of batteries</li> <li>· Container</li> </ul>		
Accuracy		± 3 mm / 10 m				
Line laser function		1 laser cross: front				
Working range w/o receiver		30 m*				
Working range with receiver		80 m (optional)				
Sector angle Hz-line		155°				
Sector angle V-line		160°				
Point laser function		5 laser dots: back, left, right, up, down				
Working range w/o receiver		30 m				
Power supply / operating time		Alkaline / 7 h				
Dust / water protection		IP 54				
Laser diode / laser class		635 nm / 2				
Temperature range		-10°C - +45°C				
Size		115 x 70 x 115 mm				
		* depending on room illumination				
				OPTIONAL ACCESSORIES		
				RECEIVERS FR 55 & FR 55-M		
				FR 55	ART.-NO. 500510	
				FR 55-M	ART.-NO. 500520	

# 360° LinerPoint HP

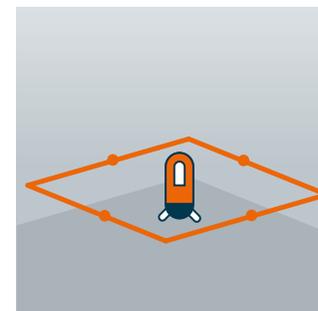
## Unique – 360° line with 4 laser points



- » · Self-levelling line laser with 360° horizontal laser line
- 4 laser points at 90° to each other
- Manual function (self-levelling mechanism clamped)
- Pulse function to extend working range with receiver (optional)

### SET 360° LINERPOINT HP + FLOOR-TO-CEILING PILLAR KS3

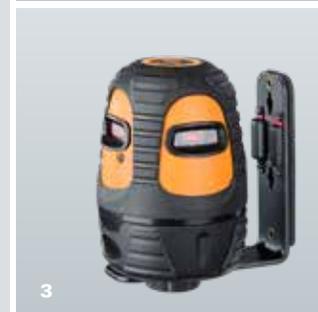
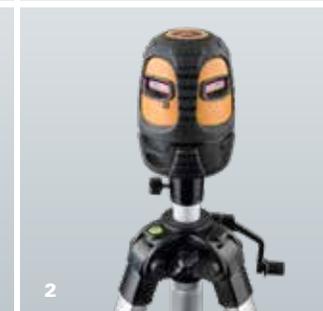
ART.-NO. 510000-S01



Bag with 360° LinerPoint HP 1

Mounted on tripod 2

Wall / tripod bracket 3



### OPTIONAL ACCESSORIES RECEIVERS FR 55 & FR 55-M

FR 55 ART.-NO. 500510  
FR 55-M ART.-NO. 500520

TECHNICAL DATA	360° LINERPOINT HP
Self-levelling range	± 5°
Accuracy	± 3 mm / 10 m
Working range without receiver	20 m*
Working range with receiver	60 m (optional)
Power supply	4 x AA Alkaline
Working time	8 h
Dust / water protection	IP 54
Laser diode	635 nm
Laser class	2
Temperature range	-10°C bis +40°C
	* depending on room illumination

FEATURES
· 360° horizontal line
· 4 laser points at 90° to each other
· Use with receiver (optional) to extend working range up 60 m
· Self-levelling function can be switched off for manual use
· Audible and visual alarm when out of level

SUPPLIED WITH 360° LINERPOINT HP
ART.-NO. 510000
· Wall / tripod bracket
· Magnetic target
· Laser glasses
· Strap attachment
· Set of batteries
· Bag



# 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
			<b>ART-NO. 552000</b>
Accuracy	± 3 mm / 10 m	<ul style="list-style-type: none"> <li>· High visibility laser lines achieved by our new innovative design</li> <li>· Independently height adjustable legs for optimum results over the full working range</li> <li>· Laser lines switchable separately</li> <li>· Fine motion control for accurate alignment</li> <li>· Fully rotatable laser head with 360° graduation for optimum flexibility</li> <li>· Integrated circular bubble for manual levelling on uneven surfaces</li> </ul>	<ul style="list-style-type: none"> <li>· 4 x AA Alkaline battery</li> <li>· 2 x Magnetic target</li> <li>· Padded bag</li> </ul>
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 – +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 - +40°C
	* depending on room illumination
FEATURES	SQUARE LINER II
	<b>ART.-NO. 551000</b>
<ul style="list-style-type: none"> <li>· Fine and clear visible laser lines</li> <li>· 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling</li> <li>· Built-in circular and tubular vials for horizontal and vertical alignment</li> </ul>	<ul style="list-style-type: none"> <li>· Batteries</li> <li>· Magnetic target</li> <li>· Case</li> </ul>





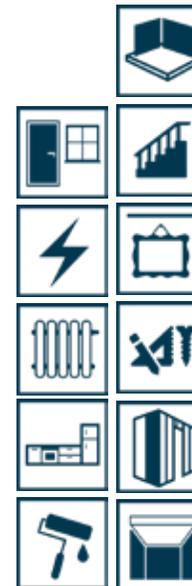
## FL 10-Cross

### 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.



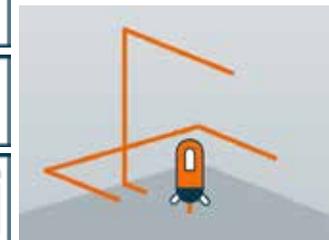
» FL 10-Cross SET



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

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





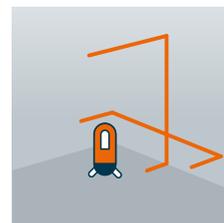
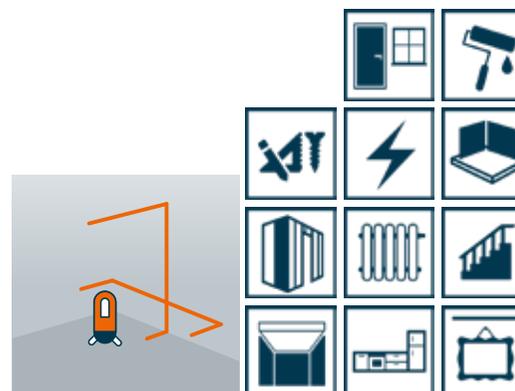
# FL 40-PowerCross Plus SP

## Convincing along the whole line

Selection PRO

» 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



**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

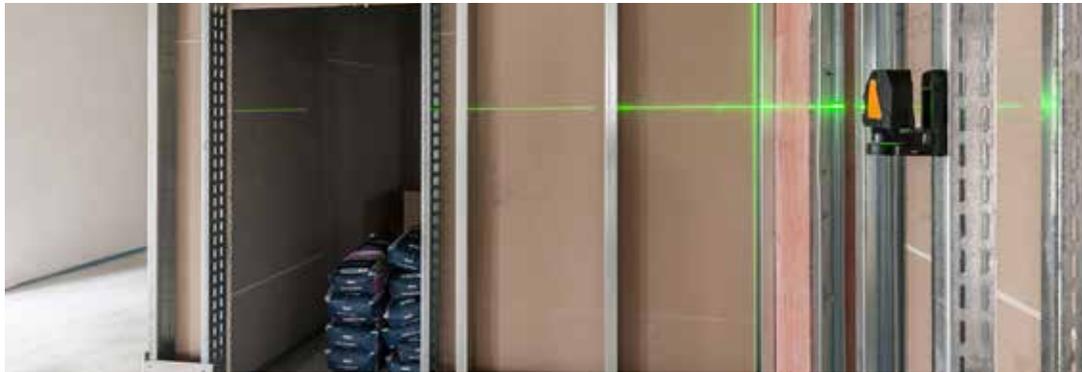
TECHNICAL DATA	FL 40-POWERCROSS PLUS SP	FLG 40-POWERCROSS PLUS GREEN SP	FEATURES
Self-levelling range	± 3°	± 3°	<ul style="list-style-type: none"> <li>1 Laser cross</li> <li>Laser lines switchable separately</li> <li>TILT function for manual use</li> <li>Visual alarm when out of level</li> <li>Use with receiver FR 75-MM / FR 55 / 55-M (optional)</li> <li>Multi-functional mount                             <ul style="list-style-type: none"> <li>height adjustable</li> <li>for wall-hanging with screw</li> <li>strap attachment</li> <li>strong magnet on back side</li> </ul> </li> <li>for tripod fixing with 5/8" or 1/4" thread</li> </ul>
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	635 nm / 2	635 nm / 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

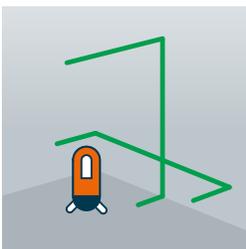
## Green is more beautiful

» 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



SUPPLIED WITH FLG 40-POWERCROSS PLUS GREEN SP	OPTIONAL
ART-NO. 541560	ART-NO. 541511
<ul style="list-style-type: none"> <li>· Multi-functional mount</li> <li>· 4 x AA Alkaline battery</li> <li>· Padded bag</li> </ul>	<ul style="list-style-type: none"> <li>· Charger</li> <li>· Li-Ion batteries</li> </ul>

# Geo3X HP

## Small but powerful



- 1 Intuitive interface
- 2 Fits with fixing systems



» **The ideal instrument for numerous alignment, measurement and levelling tasks. Projecting 3 high powered laser crosses at 90° to each other.**

- » · The versatile multi-functional mount offers a variety of mounting options to increase flexibility and productivity
- 3 laser crosses
- Compact, handy size
- Shock-resistant design suitable for robust use on construction sites
- Self-levelling function can be switched off for manual use

TECHNICAL DATA	GEO3X HP
Self-levelling range	± 3°
Accuracy	± 3 mm / 10 m
Working range without receiver	20 m*
Working range with receiver (optional)	60 m
Power supply	3 x AA Alkaline
Operating time (all lines switched on)	12 h
Dust / water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range	-10 °C to +45 °C
Weight (instrument with batteries)	0.4 kg
	* depending on room illumination

- FEATURES**
- 2 laser crosses at 90° to each other
  - Laser cross to the ceiling
  - Individually selectable laser lines
  - Self-levelling function can be switched off for manual use
  - Visual and audible alarm when out of level
  - Multi-functional mount with
    - strong magnets on the back face
    - can be fixed to a wall
    - strap attachment
    - height adjustable
    - 1/4" and 5/8" tripod thread
  - Pulse function for use with receiver (optional) to extend working range up to 60 m
  - 1/4" thread on the instruments base

**SET**  
GEO3X HP + KS3

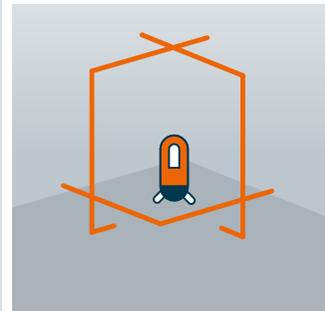
ART.-NO. 520600-S01



**SUPPLIED WITH**  
GEO3X HP

ART.-NO. 520600

- Multi-functional mount
- 3 x AA Alkaline battery
- Padded carrying 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

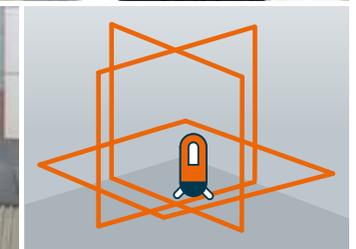
Battery compartment 2

### 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



TECHNICAL DATA	GEO6X SP	GEO6X SP KIT	GEO6X SP GREEN KIT
Self-levelling range	± 3°	± 3°	± 3°
Accuracy	± 2 mm / 10 m	± 2 mm / 10 m	± 2 mm / 10 m
Laser diode / class	red / 2	red / 2	green / 2
Working range* (radius)	30 m	30 m	40 m
Working range with receiver (radius)	60 m	60 m	70 m
Operating time / power supply			
1 x 360°	16 h / alkaline	20 h / Li-Ion	14 h / Li-Ion
2 x 360°	8 h / alkaline	12 h / Li-Ion	7 h / Li-Ion
3 x 360°	5 h / alkaline	8 h / Li-Ion	5 h / Li-Ion
Dust / water protection	IP 54	IP 54	IP 54
Temperature range	-10 °C – +45 °C	-10 °C – +45 °C	-10 °C – +45 °C
Size	14 x 13 x 8 cm	14 x 13 x 8 cm	14 x 13 x 8 cm
Weight (instrument with battery)	0,8 kg	0,8 kg	0,8 kg

\*depending on room illumination

### SUPPLIED WITH GEO6X SP

ART-NO. 534000

- 4 x Alkaline batteries
- Magnetic target
- Softbag

### SUPPLIED WITH GEO6X SP KIT

ART-NO. 534100

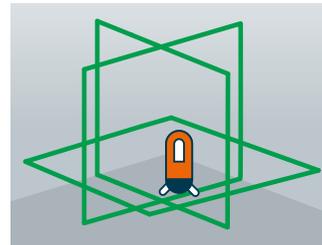
- Multi-functional mount
- Li-Ion battery, charger
- Charger with USB 3.0 cable
- Magnetic target
- Battery case for alkaline batteries
- Container

# Geo6X SP GREEN KIT

## Like red, even better in green

» **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  
**page 66**

ART-NO. 500510

- Receiver FR 55  
**page 66**

ART-NO. 290560

- Walltrack Adapter WS 1  
**page 116**



## FL 63 Fully automatic multi-line laser

» Four vertical angles at 90°, a long horizontal line, plumbing function and the excellent visibility of the laser lines make the device the indispensable measuring tool for all interior levelling work.



### SUPPLIED WITH FL 63

ART.-NO. 500350

- Laser glasses
- 4 x AA Alkaline battery
- Hard case



TECHNICAL DATA	FL 63	FEATURES
Self-levelling range	± 3,5°	<ul style="list-style-type: none"> <li>· 4 vertical lines at 90° to each other</li> <li>· 1 horizontal line</li> <li>· Plumb down beam</li> <li>· Laser lines switchable separately</li> <li>· Plumbing function</li> <li>· Self-levelling function can be locked for manual use</li> <li>· Visual and audible alarm when out of self-levelling range</li> <li>· Integrated floor tripod</li> <li>· 360° circle</li> <li>· 5/8" connection at the instrument bottom</li> </ul>
Accuracy	± 3 mm / 10 m	
Working range	20 m* (radius)	
Power supply	4 x AA Alkaline	
Operating time (all lines switched on)	6 h	
Dust / water protection	IP 54	
Laser diode / class	635 nm / 2	
Temperature range	-10°C to +45°C	
Weight (instrument with battery)	1,0 kg	
	*depending on room illumination	

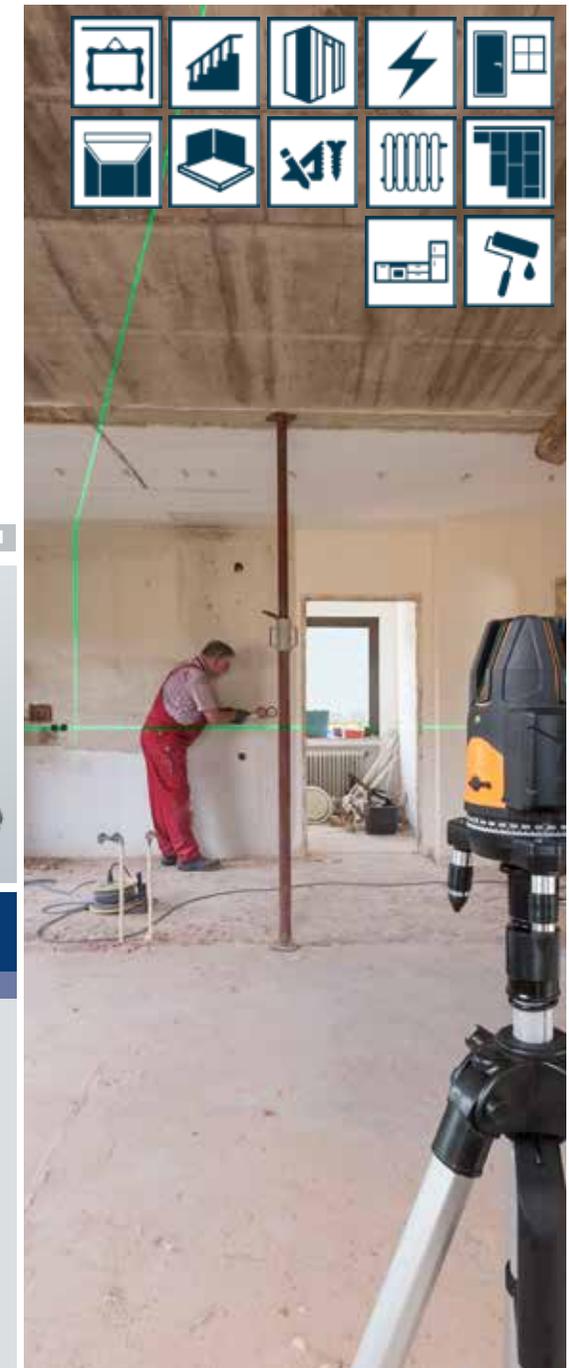
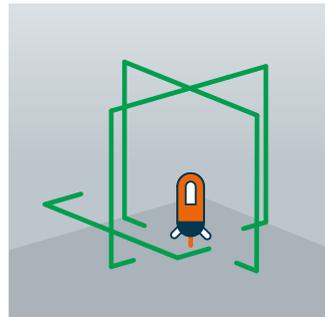
# FLG 64 GREEN HP

## 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
Self-levelling range	± 3°
Accuracy	± 2 mm / 10 m
Working range (radius)	
-without receiver	30 m*
-with receiver (optional)	60 m
Power supply	Li-Ion
Operating time (all lines switched on)	7 h
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

### FEATURES

- 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.

### SUPPLIED WITH FLG 64-GREEN HP

ART.-NO. 580400

- Li-Ion batteries
- Charger
- Alkaline battery box
- Laser intensive glasses
- Magnetic target
- Container



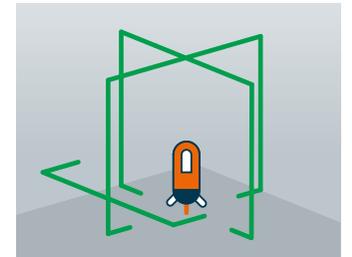
 green laser

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





# FL 70 Premium-Liner SP Technology at its best

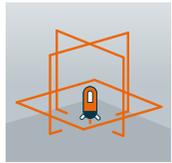
» FL 70 SP is a Selection PRO product with special features.

- » · 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**



**Selection PRO**

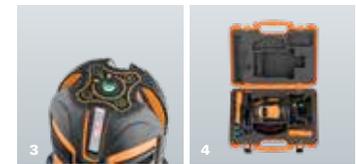


Receiver FR 55 for 80 m working range 1

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	FEATURES	SUPPLIED WITH FL 70 PREMIUM-LINER SP WITHOUT FR 55	SET FL70 PREMIUM-LINER SP + FR 55
Self-levelling range		± 3°	<ul style="list-style-type: none"> <li>· 5 laser crosses</li> <li>· 4 vertical lines at 90° to each other</li> <li>· 360° horizontal line</li> <li>· Laser cross to the ceiling</li> <li>· Plumb down beam</li> <li>· Self-levelling function can be switched off</li> <li>· Use with receiver FR 55 to extend working range up to 80 m</li> <li>· Remote control for setting slopes</li> <li>· Adjustable 360° circle</li> <li>· Slow motion screw</li> <li>· Audible and visible alarm when out of level</li> <li>· Integrated floor tripod</li> <li>· 5/8" thread for use with standard tripod</li> </ul>	ART.-NO. 582010	ART.-NO. 582000
Accuracy		± 1 mm / 10 m		· Integrated floor tripod	
Working range w/o receiver		30 m*		· Remote control	
Working range with receiver		80 m		· Li-Ion batteries and battery charger	
Power supply		Li-Ion		· Magnetic target	
Operating time		6 - 14 h		· Laser glasses	
		depending on number of laser lines switched		· Adapter for tripod connection	
Dust / water protection		IP 54		· Compartment for alkaline batteries	
Laser diode		635 nm		· Container	
Laser class		2			
Temperature range		-10°C to +45°C			
		* depending on room illumination			



# FL 1000 HP

## State-of-the-art



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

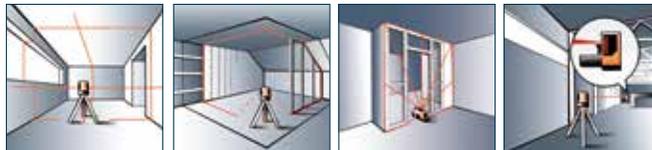
» With the ultimate FL 1000 HP even difficult measuring tasks become a mere child's play. Two vertical laser planes at 90° to each other formed through clearly visible laser lines – and additionally one 360° horizontal laser line projected by the rotation function.

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.



1 Remote control

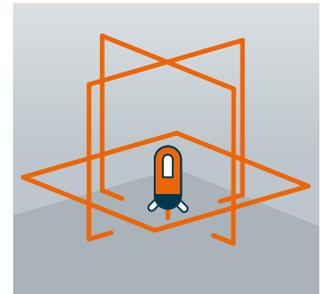
2 Hard case



TECHNICAL DATA	FL 70 PREMIUM-LINER SP
Self-levelling range	± 5°
Power supply	NiMH / Alkaline
Operating time	10 h
Charger = power supply	yes
Laser diode / laser class	635 nm / 2
Temperature range	-10 °C – +40 °C
Weight	2,85 kg
Dust / water protection	IP 54
<b>Rotating laser</b>	
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
<b>Line laser</b>	
Accuracy	± 2 mm / 10 m
Working range without receiver	20 m*
Working range with receiver	60 m
	* depending on room illumination

### FEATURES

- 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



### SUPPLIED WITH

ART-NO. 585020

- Combi-receiver FR 10
- Charger and batteries
- Magnetic target
- Laser intensive glasses
- Remote control
- Hard case

### RECEIVER FR 10 FOR FL 1000 HP

ART-NO. 585510



# 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**

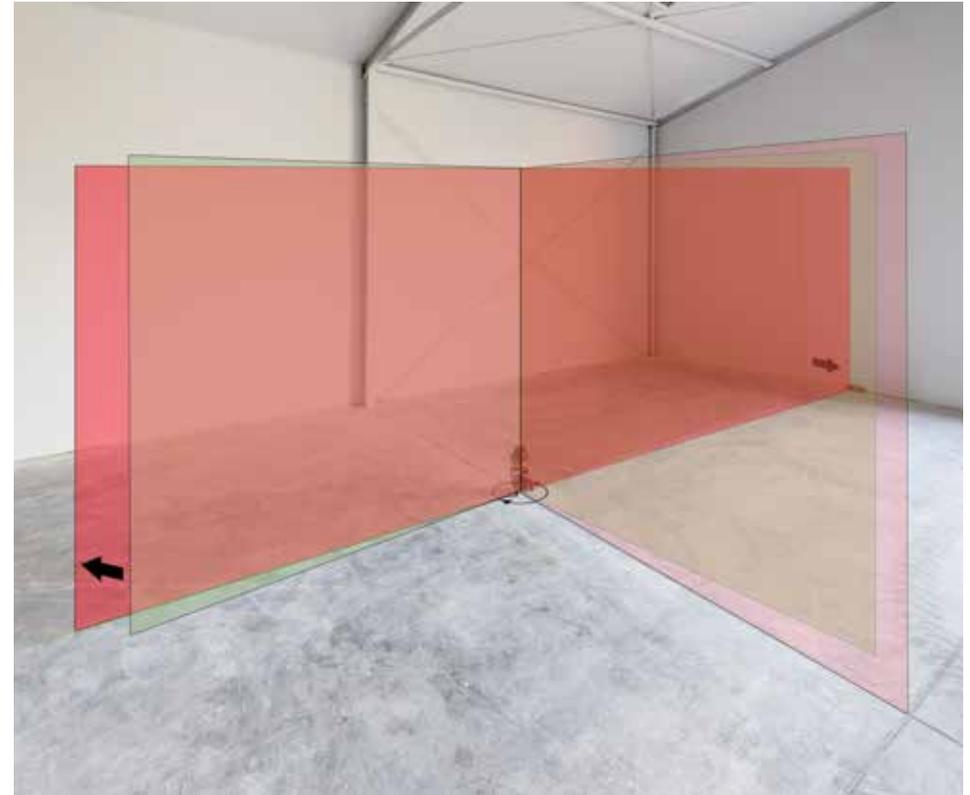
» EasyTRACK Remote Control



» EasyTRACK Base



» EasyTRACK Receiver



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 - +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, FL/G 40 PowerCross Plus/GREEN, Geo5X-L360, Geo6X/GREEN, FL/G 66-Xtreme/GREEN, FLG 64-GREEN, FL 69, FL 1000
- \*\* Compatible with any line laser (geo-FENNEL and other brands)

### 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 P-5



» FPL P-5  
FPL P-10

- FEATURES  
FPL P**
- Projects a clearly visible laser point
  - Switched power supply
  - Multi-functional mount (rotatable and swivelling)

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

# FPL C Positioning Cross Laser



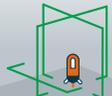
» FPL C-5  
FPL C-10  
FPL C-20

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

TECHNICAL DATA	FPL P-5	FPL L-5	FPL L-10	FPL L-20	FPL C-5	FPL C-10	FPL C-20
	ART.-NO. 519205	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	red
Laser wave length	635 nm	635 nm	635 nm	635 nm	635 nm	635 nm	635 nm
Integrated laser diode	5 mW	5 mW	10 mW	20 mW	5 mW	10 mW	20 mW
Laser output power	< 1 mW	< 1 mW	< 1 mW	< 5 mW	< 1 mW	< 1 mW	< 5 mW
Laser class	2	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 – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C
Dust / water protection	IP 41	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 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

	GEO3P	GEO5P	CROSS- POINTER5 SP	360° LINER- POINT HP	GEOSPIDER	SQUARE LINER II	FL 10-CROSS	FL 40-POWER- CROSS PLUS SP	FLG 40-POWER- CROSS PLUS GREEN SP
ART.-NO.	555030	555050	531500	510000	552000	551000	540100	541510	541560
									
Laser class	2	2	2	2	2	2	2	2	2
Scheme of projected lines									
Vertical lines	-	-	1	1	-	-	1	1	1
Horizontal laser range / angle	-	-	135°	360°	-	-	135°	135°	135°
Laser points	3	5	-	4	-	-	-	-	-
Plumb down beam	yes	yes	yes	-	-	-	-	-	-
Accuracy / 10 m	± 2 mm	± 2 mm	± 3 mm	± 3 mm	± 3 mm	± 3 mm	± 5 mm	± 3 mm	± 3 mm
Dust / water protection	IP 54	IP 54	IP 54	IP 54	IP 52	IP 52	IP 54	IP 54	IP 54
Working range w/o receiver (radius)	30 m	30 m	30 m	20 m	40 m	10 m	10 m	30 m	40 m
Working range with receiver (radius)	-	-	80 m	60 m	-	-	-	80 m	100 m
Power supply	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Receiver	-	-	optional	optional	-	-	-	optional	optional
Page	10	10	11	12	14	15	16	18	19

GEO3X HP	GEO6X SP	GEO6X SP KIT	GEO6X GREEN KIT SP	FL 63	FLG 64-GREEN HP	FLG 66-XTREME GREEN SP	FL 70 PREMIUM-LINER SP	FL 1000 HP	
520600	534000	534100	534500	500350	580550	580400	582000	585020	
									
2	2	2	2	2	2	2	2	2	Laser class
									Scheme of projected lines
2	4	4	4	4	4	4	4	4	Vertical lines
150°	360°	360°	360°	130°	130°	130°	360°	360°	Horizontal laser range / angle
-	-	-	-	-	-	-	-	-	Laser points
-	yes	yes	yes	yes	yes	yes	yes	yes	Plumb down beam
± 3 mm	± 2 mm	± 2 mm	± 2 mm	± 3 mm	± 2 mm	± 2 mm	± 1 mm	± 1 mm	Accuracy / 10 m
IP 54	IP 65	IP 54	IP 54	Dust / water protection					
20 m	30 m	30 m	40 m	20 m	30 m	40 m	30 m	40 m	Working range w/o receiver (radius)
60 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	Alkaline	Li-Ion	Li-Ion	Li-Ion	NiMH/Alkaline	Power supply
optional	optional	optional	optional	optional	optional	optional	inklusive	inklusive	Receiver
20	22	22	23	24	25	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.





# FL 190A

## Instant 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.

ROTATING LASER



SUPPLIED WITH FL 190A (LC 2) + FR 45	SUPPLIED WITH FL 190A (LC 2) + FR-DIST 30
ART.-NO. 292190	ART.-NO. 292193
<ul style="list-style-type: none"> <li>Receiver FR 45 with clamp for levelling staff</li> <li>NiMH batteries</li> <li>Charger</li> <li>Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>Receiver FR-DIST 30 with clamp for levelling staff</li> <li>NiMH batteries</li> <li>Charger</li> <li>Carrying case</li> </ul>

TECHNICAL DATA	FL 190A	FEATURES
Self-levelling range	± 3°	<ul style="list-style-type: none"> <li>Instant self-levelling</li> <li>Horizontal self-levelling rotating laser; vertical levelling with one footscrew</li> <li>Automatic shut-off and audible alarm when out of self-levelling range</li> <li>Variable rotating speed</li> <li>Permanent 90° beam to zenith</li> <li>Rechargeable NiMH batteries with intelligent charger</li> <li>Integrated floor/wall mount with adjustment screw</li> </ul>
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 – +45°C	
Weight (instrument with battery)	1,5 kg	
	* depending on the room illumination	



# 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



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



1 Receiver FR 45



2 Receiver FR-DIST 30

### TECHNICAL DATA

Self-levelling range	± 3°
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

### FEATURES

- 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

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

## FL 105H

### Quick and easy to use - now even better



ROTATING LASER

» **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

- Receiver FR 45 **1**
- Receiver FR 77-MM **2**
- Receiver FR-DIST 30 **3**



TECHNICAL DATA	FL 105H	FEATURES	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
			<b>ART.-NO. 212001</b>	<b>ART.-NO. 212078</b>	<b>ART.-NO. 212031</b>
Self-levelling	horizontal	Self-levelling horizontal rotating laser	· Receiver FR 45 with clamp for levelling staff	· Receiver FR 77-MM with clamp for levelling staff	· Receiver FR-DIST 30 with clamp for levelling staff
Self-levelling range	±5°		· Rechargeable battery and charger	· Rechargeable battery and charger	· Rechargeable battery and charger
Laser class	2	· 3 buttons for user-friendly functionality	· Battery compartment for alkaline batteries	· Battery compartment for alkaline batteries	· Battery compartment for alkaline batteries
Visible laser beam	red	· Working range 600 m diameter	· Container	· Container	· Container
Accuracy horizontal	1,0 mm / 10 m	· Dust / water protection IP 65			
Working range with receiver Ø		· Automatic TILT alarm function			
*with FR 45	600 m	· VWS function (Vibration-Wind-Security)			
*with FR 77-MM	300 m	· Auto-shut-off when out of level			
Automatic TILT function	yes				
VWS function	yes				
Rotating speed rpm	800				
Operating time	36 h NiMH				
Temperature range	-20° to +50°C				
Protection class	IP 65				



**SET**  
FL 105H (LC 2) WITH FR 45 + FS 20 + TN 15

ART.-NO. 212001-S02



**SET**  
FL 105H (LC 2) WITH FR 77-MM + FS 20 + TN 15

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	FEATURES	SUPPLIED WITH FL 115H (LC 2) + FR 45	SUPPLIED WITH FL 115H (LC 2) + FR 77-MM	SUPPLIED WITH FL 115H (LC 2) + FR-DIST 30
			ART-NO. 211001	ART-NO. 211078	ART-NO. 211031
Self-levelling	horizontal	Premium self-levelling horizontal rotating laser	· Receiver FR 45 with clamp	· Receiver FR 77-MM with clamp	· Receiver FR-DIST 30 with clamp
Grade	manual		· Li-Ion rechargeable battery with charger	· Li-Ion rechargeable battery with charger	· Li-Ion rechargeable battery with charger
Self-levelling range	$\pm 5^\circ$	· Easy and intuitive to use	· Battery case for alkaline batteries	· Battery case for alkaline batteries	· Battery case for alkaline batteries
Laser class	2	· Robust rubberised housing with metal cover	· Container	· Container	· Container
Visible laser beam	red	· Working range 1200 m diameter			
Accuracy horizontal	$0,5 \text{ mm} / 10 \text{ m}$	· Dust / water protection IP 66			
Working range with receiver $\varnothing$		· High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$			
· with FR 45	1200 m	· Accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$			
· with FR 77-MM	900 m	· Automatic TILT alarm function			
· with FMR 706-M/C	900 m	· VWS function (Vibration-Wind-Security)			
Slope setting manual X-Axis	$\pm 5^\circ (\pm 9\%)$	· Auto-shut-off when out of level			
Slope setting manual Y-Axis	$\pm 5^\circ (\pm 9\%)$	· Electronic beam screen			
Automatic TILT function	yes	· Manual slope setting of X and Y axis			
VWS function	yes	· Li-Ion battery technology			
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				



**SET**  
FL 115H (LC 2) MIT FR 45 + FS 20 + TN 15

ART.-NO. 211001-S02



ROTATING  
LASER

**SET**  
FL 115H (LC 2) + FR 77-MM + FS 20 + TN 15

ART.-NO. 211078-S01



# FL 245HV / FLG 245HV-GREEN

## The new all-rounder

ROTATING  
LASER



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

TECHNICAL DATA	FL 245HV (LC 2)	FL 245HV (LC 3R)	FLG 245HV-GREEN
Self-levelling	horizontal/vertical	horizontal/vertical	horizontal/vertical
Grade	manual	manual	manual
Self-levelling range	±5°	±5°	±5°
Laser class	2	3R	2
Visible laser beam	red	red	green
Accuracy horizontal	1,0 mm / 10 m	1,0 mm / 10 m	1,0 mm / 10 m
Accuracy vertical	1,5 mm / 10 m	1,5 mm / 10 m	1,5 mm / 10 m
Working range with FR 45 Ø	500 m	700 m	1000 m
Rotating w/o receiver Ø	40 m	60 m	40 m
Scanning w/o receiver / radius	40 m	60 m	60 m
Scanning	2 step	2 step	2 step
Laserdot mode	yes	yes	yes
90° plumb beam up	yes	yes	yes
Slope setting manual X-Axis	±5° (±9%)	±5° (±9%)	±5° (±9%)
Y-Axis	±5° (±9%)	±5° (±9%)	±5° (±9%)
Automatic TILT function	yes	yes	yes
Working range remote control	IR 100 m	IR 100 m	IR 100 m
Remote control function (on/off)	yes	yes	yes
Rotating speed rpm	300, 800	300, 800	300, 800
Operating time	30 h NiMH	26 h NiMH	24 h NiMH
Temperature range	-20° to +50°C	-20° to +50°C	-20° to +50°C
Protection class	IP 54	IP 54	IP 54



Container with FL 245HV **1**  
 Container with  
 FLG 245HV-GREEN **2**

**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 (LC 3R) + FR45**

ART.-NO. 244001

- 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

**SUPPLIED WITH  
 FL 245HV (LC 2) + FR45**

ART.-NO. 244021

- 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



1



2

**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

**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

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

ART.-NO. 244051

- 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

**SET  
 FL 245HV (LC 2) + FR 45  
 + FS 30-L + TN 15**

ART.-NO. 244021-S02



# FLG 245HV-GREEN TRACKING

## The indoor alignment pro



» **The latest development of interior lasers for all applications**

- 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 and the remote control
- All additional functions including scanning and slope setting are accessed from the remote control
- TRACKING function at the receiver

» **Robust remote control with 100 m range**

ROTATING LASER



1



2

Case with FLG 245HV-GREEN Tracking 1

Receiver FR 77-MM Tracking 2

**SUPPLIED WITH  
FLG 245HV-GREEN TRACKING**

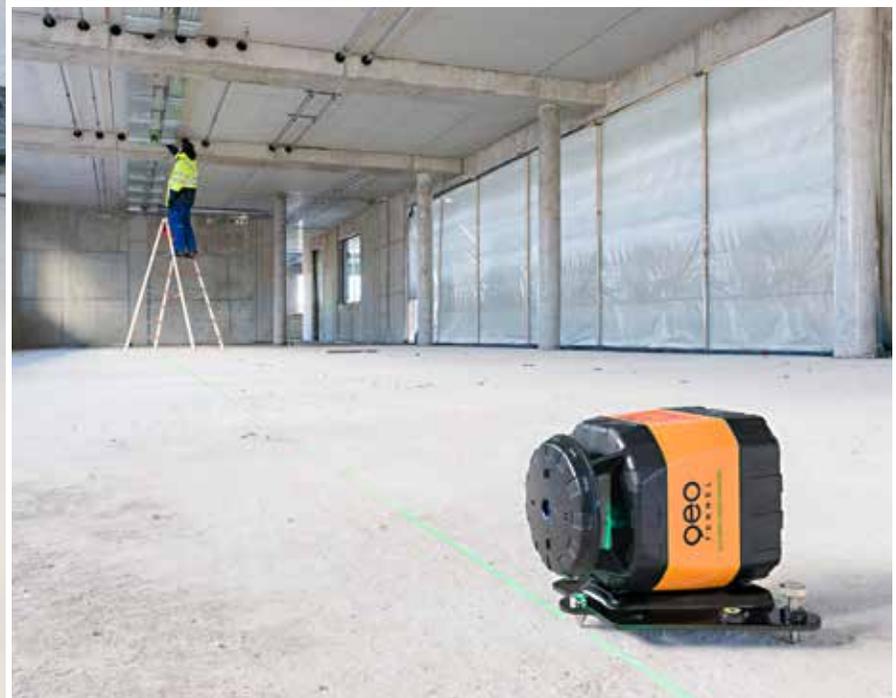
ART.-NO. 244701

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

**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
Protection class	IP 54



# FL 265HV & FLG 265HV-GREEN

## Best in class



- » **The latest generation of the "Best in class"**
  - 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 and the remote control
  - All additional functions including scanning and slope setting are accessed from the remote control
- » **Improved performance**
  - Robust remote control with 100 m range

Supplied with FL 265HV

<b>1</b>	<b>SUPPLIED WITH</b> FL 265HV (LC 2) + FR 45	<b>SUPPLIED WITH</b> FL 265HV (LC 2) + FR 77-MM
	ART.-NO. 242021	ART.-NO. 242098

Supplied with  
FLG 265HV-GREEN

<b>2</b>	<b>SUPPLIED WITH</b> FLG 265HV-GREEN (LC 2) + FR 45	<b>SUPPLIED WITH</b> FLG 265HV-GREEN (LC 2) + FR 77-MM
	ART.-NO. 242501	ART.-NO. 242578

green laser

<b>1</b>	<b>SUPPLIED WITH</b> FL 265HV (LC 3R) + FR 45	<b>SUPPLIED WITH</b> FL 265HV (LC 3R) + FR 77-MM	<b>SUPPLIED WITH</b> FLG 265HV-GREEN (LC 2) + FR 45	<b>SUPPLIED WITH</b> FLG 265HV-GREEN (LC 2) + FR 77-MM	<b>SUPPLIED WITH</b> FLG 265HV-GREEN WITHOUT RECEIVER
	ART.-NO. 242001	ART.-NO. 242078	ART.-NO. 242501	ART.-NO. 242578	ART.-NO. 242551
	<ul style="list-style-type: none"> <li>· Receiver FR 45 with clamp</li> <li>· Remote control</li> <li>· Rechargeable batteries</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Floor mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 77-MM with clamp</li> <li>· Remote control</li> <li>· Rechargeable batteries</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Floor mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 45 with clamp</li> <li>· Remote control</li> <li>· Rechargeable batteries</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Floor mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 77-MM with clamp</li> <li>· Remote control</li> <li>· Rechargeable batteries</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Floor mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>· Remote control</li> <li>· Rechargeable batteries</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Floor mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Carrying case</li> </ul>



# 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

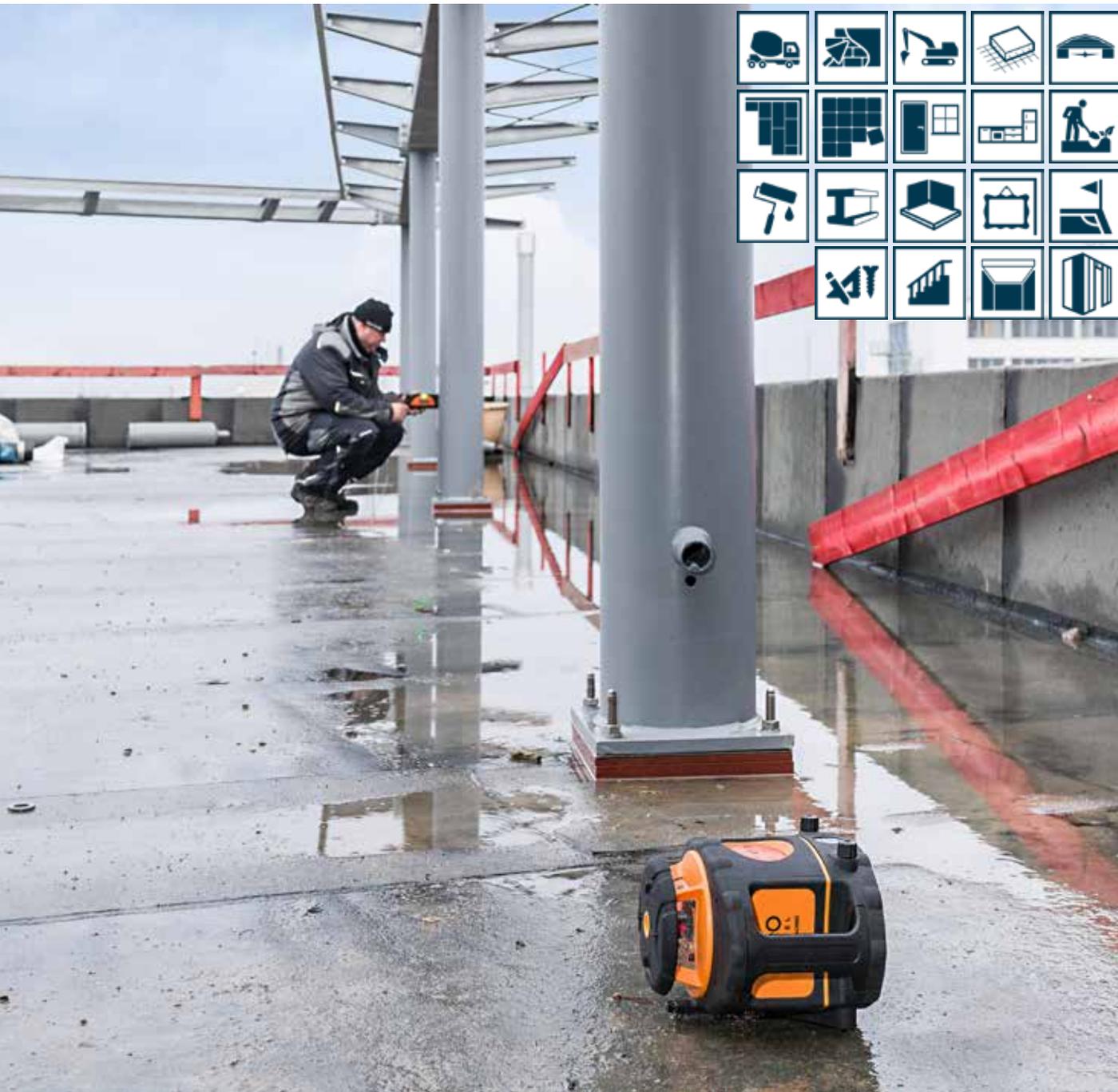


Receiver FR 77-MM TRACKING 1



### 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 60 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  $\pm 0,5 \text{ mm} / 10 \text{ m}$
- 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	
*with FR 77-MM TRACKING	400 m
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
Protection class	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 150H-G

## Horizontal dual grade laser



ROTATING LASER

» **FL 150H-G combines high performance and easy operation.**

- » High performance
  - Advanced electro-mechanical design
  - Temperature stability ensures measuring accuracy
  - 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 at instrument



Supplied with **1**

Remote control range 80 m **2**

TECHNICAL DATA	FL 150H-G (LC 2)	FL 150H-G (LC 3R)	SUPPLIED WITH FL 150H-G (LC 2) + FR 45	SUPPLIED WITH FL 150H-G (LC 2) + FR 77-MM	SUPPLIED WITH FL 150H-G (LC 2) + FR-DIST 30
			ART.-NO. 213020	ART.-NO. 213097	ART.-NO. 213050
Self-levelling range	$\pm 6^\circ$	$\pm 6^\circ$			
Accuracy	$\pm 0,5 \text{ mm} / 10 \text{ m}$	$\pm 0,5 \text{ mm} / 10 \text{ m}$			
Working range with receiver FR 45 $\varnothing$	800 m	1200 m			
receiver FR 77-MM (optional) $\varnothing$	400 m	600 m			
Laser class	2	3R			
Horizontal slope setting					
X-Axis	$\pm 10.000\%$	$\pm 10.000\%$			
Y-Axis	$\pm 10.000\%$	$\pm 10.000\%$			
X and Y-Axis	$\Sigma \pm 14 \%$	$\Sigma \pm 14 \%$			
Rotating speed	600 U/min	600 U/min			
Operating time	30 h	30 h			
Power supply	Li-Ion	Li-Ion			
	Alkaline batteries (optional)	Alkaline batteries (optional)			
RF Remote control range	80 m	80 m			
Temperature range	-20 °C – +50 °C	-20 °C – +50 °C			
Dust / water protection	IP 65	IP 65			
Weight (instrument only)	2,2 kg	2,2 kg			
			SUPPLIED WITH FL 150H-G (LC 3R) + FR 45	SUPPLIED WITH FL 150H-G (LC 3R) + FR 77-MM	
			ART.-NO. 213000	ART.-NO. 213077	
			· Receiver FR 45 with clamp for levelling staff	· Receiver FR 77-MM with clamp for levelling staff	· Receiver FR-DIST 30 with clamp for levelling staff
			· 2-Way RF remote control	· 2-Way RF remote control	· 2-Way RF remote control
			· Li-Ion battery	· Li-Ion battery	· Li-Ion battery
			· International charger	· International charger	· International charger
			· Battery compartment for alkaline batteries	· Battery compartment for alkaline batteries	· Battery compartment for alkaline batteries
			· Carrying case	· Carrying case	· Carrying case



FEATURES

- Dual Grade Laser
- Horizontal
- Digital grade adjustment
- Monitored grade
- Automatic TILT function
- VWS function combined with TILT function
- Illuminated display
- 2-Way RF remote control
- Remote control screen
- Li-Ion battery technology
- International charger with adapter for car cigarette lighter socket

SET  
FL 150H-G (LC 2) + FR 45 + FS 50-M + TN 15

ART.-NO. 213020-S02



SET  
FL 150H-G (LC 2) + FR 77-MM + FS 50-M + TN 15

ART.-NO. 213097-S01



ROTATING LASER

# FL 505HV-G

## The versatile dual grade laser



ROTATING 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

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	$-10^\circ \text{C} - +50^\circ \text{C}$
Dust / water protection	IP 66
Weight (instrument only)	3.85 kg

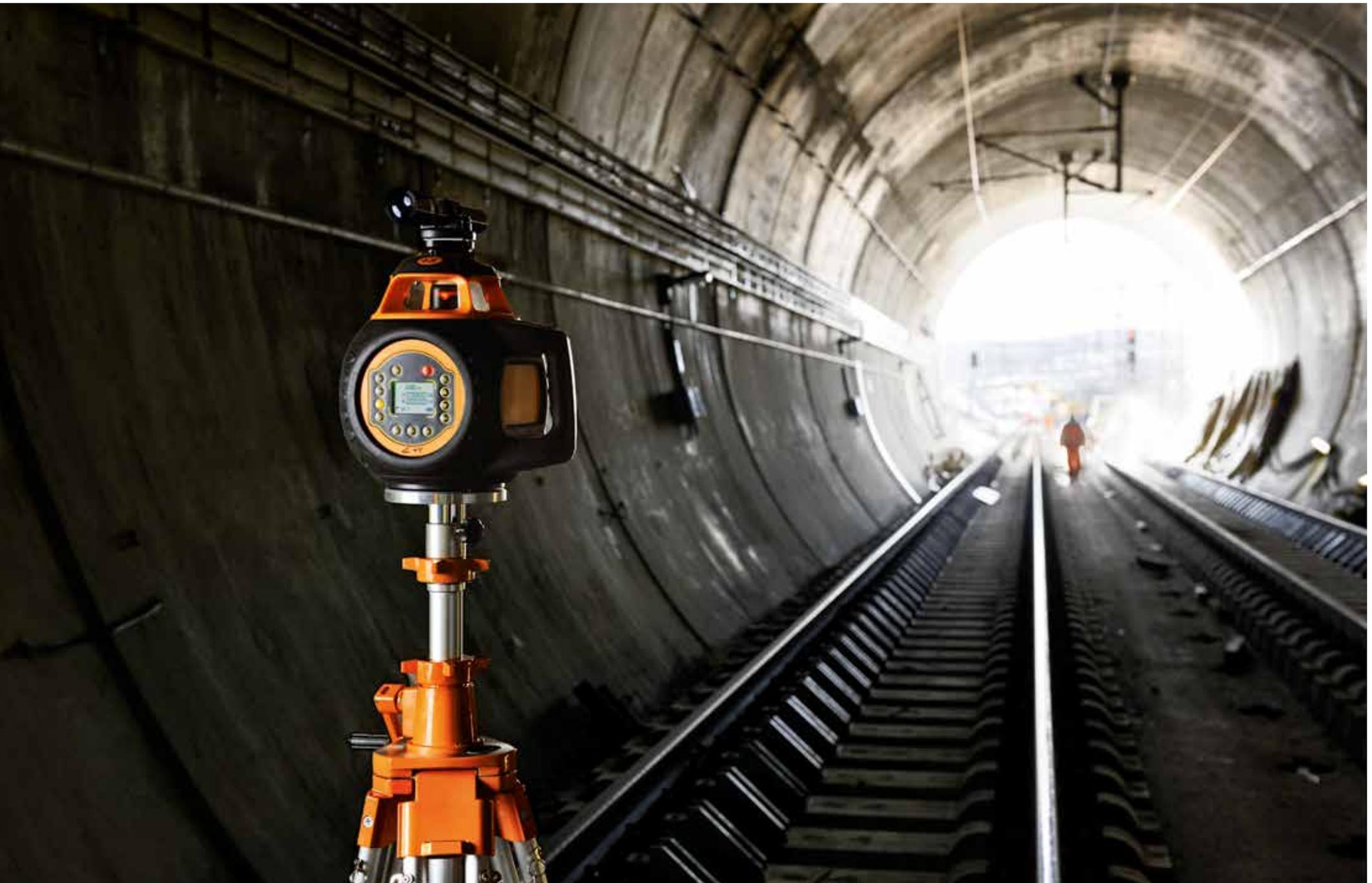
- 1 With 360° horizontal fine adjustment bracket
- 2 With 9-channel 2-way RF remote control
- 3 Complete kit supplied in container



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

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

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



# FL 510HV-G TRACKING

## 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.



ROTATING LASER

### INCLUSIVE

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

### OPTIONAL

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



### ADDITIONAL 2. RECEIVER

ART-NO. 252000

- Receiver FR 45

ART-NO. 257100

- Receiver FR 77-MM

ART-NO. 257300

- Receiver FR-DIST 30

TECHNICAL DATA	FL 510HV-G TRACKING	FEATURES	SUPPLIED WITH FL 510HV-G TRACKING
Self-levelling range	± 8°	<ul style="list-style-type: none"> <li>· Dual Axis Laser</li> <li>· Horizontal and vertical</li> <li>· Digital grade adjustment</li> <li>· Monitored grade (also in tracking mode)</li> <li>· TILT function</li> <li>· VWS function</li> <li>· Tracking function horizontal and vertical</li> <li>· Zonal control</li> <li>· 90° beam to zenith</li> <li>· Illuminated display</li> <li>· 2-way RF remote control</li> <li>· Manual function</li> <li>· Operation with rechargeable Li-Ion or alkaline batteries</li> <li>· Dust / water protection IP 66</li> </ul>	ART-NO. 231700
Accuracy horizontal	± 0.5 mm / 10 m		· Receiver FR 77-MM TRACKING with clamps for levelling staff and scaffold
Accuracy vertical	± 1 mm / 10 m		· Rechargeable batteries and charger
Working range with receiver FR 77-MM TRACKING Ø	400 m*		· 2-way RF remote control
Laser diode / Laser class	2		· Li-Ion batteries and charger
Horizontal slope setting			· Vertical mount
X-axis	± 10.000 %		· Telescopic viewfinder
Y-axis	± 10.000 %		· Container
X and Y axis	Σ ± 14 %		
Vertical slope setting			
X axis	± 10.000 %		
Y(Z) axis	horizontal self-levelled		
Working range tracking function	140 m*		
Rotating speed	300 / 600 / 1100 rpm		
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 voids 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  $\pm 10\%$
  - Manual slope setting of X and Y axis
- **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

- » 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 Lasers Outline

	FL 190A	FLG 190A GREEN	FL 105H	FL 115H	FL 245HV	FLG 245HV-GREEN
ART.-NO.	292190	292195	212001	211001	244021	244501
						
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	manual	-	-	fully automatic	fully automatic
Accuracy / 10 m	H ± 1,5 mm	H ± 1,5 mm	± 1,0 mm	± 0,5 mm	H ± 1,0 mm	H ± 1,0 mm
Dust / water protection	IP 54	IP 54	IP 65	IP 66	IP 54	IP 54
Working range w/o receiver Ø	30 m	40 m	40 m	60 m	40 m	60 m
Working range with receiver FR 45 Ø	400 m	600 m	600 m	1200 m	500 m	1000 m
Working range with receiver FR 77-MM Ø	-	-	300 m	900 m	-	-
rpm	200, 400, 600	200, 400, 600	800	800	300, 800	300, 800
Tracking function	-	-	-	-	-	-
TILT function	-	-	yes	yes	yes	yes
VWS function	-	-	yes	yes	-	-
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
Power supply	NiMH	NiMH	NiMH	Li-Ion	NiMH	NiMH
Receiver, remote control, rechargeable battery, charger	inclusive, without remote	inclusive, without remote	inclusive, without remote	inclusive	inclusive	inclusive
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FLG 245HV-GREEN TRACKING	FL 265HV	FLG 265HV-GREEN	FL 275HV-TRACKING	FL 150H-G	FL 505HV-G	FL 510HV-G TRACKING	ART.-NO.
244701	242021	242501	242701	213020	231020	231700	
							
2	2	2	2	2	2	2	Laser class
fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	Horizontal levelling
fully automatic	fully automatic	fully automatic	fully automatic	-	fully automatic	fully automatic	Vertical levelling
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	Accuracy / 10 m
IP 54	IP 66	IP 66	IP 66	IP 65	IP 66	IP 66	Dust / water protection
60 m	40 m	60 m	40 m	40 m	40 m	40 m	Working range w/o receiver Ø
-	800 m	1000 m	-	800 m	900 m	40 m	Working range with receiver FR 45 Ø
1000 m	400 m	1200 m	400 m	400 m	400 m	800 m	Working range with receiver FR 77-MM Ø
300, 800	300, 800	300, 800	300, 800	600	300,600,1100	300,600,1100	rpm
yes	-	-	yes	-	-	yes	Tracking function
yes	yes	yes	yes	yes	yes	yes	TILT function
-	yes	yes	yes	yes	yes	yes	VWS function
± 5° (9 %)	± 5° (9 %)	± 5° (9 %)	± 5° (9 %)	10%	10 %	10 %	Slope function of both axis X and Y
manual	manual	manual	manual	digital / controlled	digital / controlled	digital / controlled	Slope setting
yes	yes	yes	yes	-	yes	yes	Plumb up / down beam
NiMH	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Power supply
inclusive	inclusive	inclusive	inclusive	inclusive	inclusive	inclusive	Receiver, remote control, rechargeable battery, charger
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# 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.

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

TECHNICAL DATA	FKL 44 (LC 2)	FEATURES	SUPPLIED WITH FKL 44 (LC 2)
			ART.-NO. 454000
Laser class	2	<ul style="list-style-type: none"> <li>· Robust aluminium housing</li> <li>· Easy intuitive operation</li> <li>· Fully automatic self-levelling</li> <li>· Automatic beam centering</li> <li>· Laser start point indication</li> <li>· Clear easy-to-read OLED-Display</li> <li>· RF Remote control with long working range</li> </ul>	<ul style="list-style-type: none"> <li>· Target frame with targets DN 100/125/150/200/250/300</li> <li>· Special target for DN 100 pipes (also target frame for FR-FKL TRACKING)</li> <li>· RF-Remote control</li> <li>· Leg sets DN 125 / 150 / 200 / 250 / 300</li> <li>· Li-Ion battery and charger</li> </ul>
Laser diode	red		
Beam diameter	10 mm		
Working range	120 m		
Grade range	-20% - +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 - +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"> <li>· Tracking function for automatic detection of the horizontal target plate center.</li> </ul>	
Working range	50 m		
Power supply	2 x AAA batteries		
Temperature range	-10°C - +45°C		
Dust / water protection	IP 67		



» 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 and FKL-55 GREEN

## Straight and advanced

» FKL 55



» **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

» 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.

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

» FKL 55-Green



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 % – +30 %	-20 % – +30 %	-20 % – +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 – +40 °C	-20 °C – +50 °C	-20 °C – +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	SUPPLIED WITH
<ul style="list-style-type: none"> <li>· Robust aluminium housing</li> <li>· Easy intuitive operation</li> <li>· Fully automatic self-levelling</li> <li>· Automatic beam centering</li> <li>· Laser start point indication</li> <li>· Clear easy-to-read OLED-Display</li> <li>· IR remote control with long working range</li> <li>· Integrated rechargeable batteries</li> </ul>	<ul style="list-style-type: none"> <li>· Target frame with target DN 150–300</li> <li>· Container</li> <li>· Pipe Laser</li> <li>· IR remote control</li> <li>· Leg set DN 500</li> <li>· Leg set DN 400</li> <li>· Leg set DN 300</li> <li>· Leg set DN 250</li> <li>· Leg set DN 200</li> <li>· Adapter for 3-leg set up</li> <li>· Charger</li> <li>· Battery case for alkaline batteries</li> <li>· Target DN 400–500</li> </ul>



## Universal Mount for FKL-55 / FKL-55 Green



UNIVERSAL MOUNT
ART.-NO. 455100
<ul style="list-style-type: none"> <li>· Levelling base with height adjustable mount for use</li> <li>· in manhole</li> <li>· in or in front of pipes with large diameter</li> <li>· with 5/8" female thread for tripod connection</li> </ul>

# 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

- 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

- 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

- 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

- 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	FEATURES FR 45
Suitable for laser diode	red	ART.-NO. 252000
Indication	2 x LCD	· For red and green laser
3-step accuracy	± 10 mm, ± 4 mm, ± 2 mm	· Height indication by 3 LEDs which are situated on the front side and top and with a large display on the front
Power supply	1 x 9 V	· With clamp
Signal tones	3	· Shut-off tone
Tone can be switched off	yes	· Automatic shut-off
Auto-shut-off	yes	· Built-in vials
Illumination	yes	
Weight	0,2 kg	
Dust / water protection	IP 66	



RECEIVERS FOR LASERS

# FR 77-MM Laser Receiver

» 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
- Special mount 3

RECEIVERS FOR LASERS

### UNIVERSAL ACCESSORIES FOR RED AND GREEN ROTATING LASERS



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 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

# FR-DIST 30

## Receiver with integrated Laser Distance Meter for Rotating Lasers

mm indication **1**

Measurement of area **2**

» **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



TECHNICAL DATA	FR-DIST 30	FEATURES
<b>LASER RECEIVER</b>		
Accuracy	± 1 / 5 / 9 mm	· Can be used with either red or green beam rotating lasers
Working range	300 m (radius)	
Temperature range	-10°C to +50°C	
<b>LASER DISTANCE METER</b>		
Accuracy	± 2 mm	· mm-indication of difference between laserplane and "0" level
Measuring range	50 m	
Temperature range	0°C to +40°C	
Point of reference	Bottom, on-Level, top	· Extensive laser distance meter functions
Measuring units	m / ft / inch	
Laser class	2	
<b>GENERAL</b>		
Length of receiving window	100 mm	Measuring functions (LASER DISTANCE METER)
Signal tones	yes	
Display indication	front	
LED indication	front / side	· Single / permanent measurement
Power supply / operating time	3 x AA Alkaline	
Operating time		
used as laser receiver only	30 h	· Area / volume
used as laser distance meter only	5000 measurements	
Combined	8 h	
Display illumination	yes	· Pythagoras 1, height (2 points)
Magnets & Vials	top, side	
Dust / water protection	IP 65	
Dimensions	172 x 80 x 32 mm	· Pythagoras 2, overall height (3 points)
Weight	0,3 kg	
<b>SUPPLIED WITH</b>		
<b>FR-DIST 30</b>		
<b>ART.-NO. 257300</b>		
· 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.



RECEIVERS  
FOR LASERS

TECHNICAL DATA	FMR 600	SUPPLIED WITH FMR 600	FEATURES
		<b>ART.-NO. 265000</b>	
Accuracy fine	± 5mm	<ul style="list-style-type: none"> <li>· Batteries</li> <li>· Container</li> <li>· Clamp for levelling staff</li> </ul>	<ul style="list-style-type: none"> <li>· Attachment to levelling staff by use of clamp or directly to the machine with built-in magnets</li> <li>· LCD, LEDs and 3 different tones indicate heights</li> <li>· Memory function of last received data</li> <li>· Water / dust resistant</li> </ul>
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 - +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



RECEIVERS  
FOR LASERS

TECHNICAL DATA	FMR 700-M/C UND 706-M/C
Accuracy fine	± 2 mm – ± 10 mm
Accuracy coarse	± 5 mm – ± 23 mm
Rechargeable batteries	7,2 V NIMH 2500 mAh
Operating time	40 h
Charging time	15 h
Temperature range	-20°C - +50°C
Dimensions	376 x 180 x 49mm
Weight	3,1 kg

FEATURES
<ul style="list-style-type: none"> <li>Length of receiving window: 25 cm</li> <li>Connect to the machine with screw clamps or with strong magnets (both supplied in the kit)</li> <li>Detects beam from rotating laser levels of any brand</li> <li>Remote display</li> </ul>

SUPPLIED WITH FMR 700-M/C UND 706-M/C
Machine control receiver, built-in rechargeable battery, charger, 12/24V-battery cable, remote display with connection cable, hard case
Also supplied separately: <ul style="list-style-type: none"> <li>Machine control receiver FMR 706-M/C, built-in battery, charger, 12/24V battery cable, hard case</li> <li>Remote display with connection cable</li> </ul>

FMR 706-M/C (MAGNET AND CLAMP)
ART.-NO. 260550

SET FMR 700-M/C (MAGNET AND CLAMP) + FRP 707
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



RECEIVERS FOR LASERS

TECHNICAL DATA	FMR 800-M/C	MACHINE CONNECTION	FEATURES
Beam reception angle	360°	<ul style="list-style-type: none"> <li>· Magnetic connection directly to the machine</li> <li>· Clamp connection to the machine mast</li> <li>· Mast diameter 40–50 mm</li> </ul>	<ul style="list-style-type: none"> <li>· Length of receiving window: 27 cm</li> <li>· Will detect the beam from any brand of rotating laser (red)</li> <li>· Dust / water protected metal housing</li> <li>· Wireless remote display with suction pad and integrated magnets</li> </ul>
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 – +50 °C		
Dimensions	370 x 132 x 92 mm		
Weight (receiver only)	3.95 kg		

BULLDOZER MODE		EXCAVATOR MODE	
<b>Blade tilt</b> (Receiver movement left / right tilted)		<b>Bucket tilt</b> (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	
<b>Height indication</b> (Receiver movement up / down)		<b>Height indication</b> (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"> <li>· Machine receiver FMR 800-M/C with built-in rechargeable battery</li> <li>· Charger</li> <li>· Hard carrying case</li> </ul>	<ul style="list-style-type: none"> <li>· SET Machine receiver FMR 800-M/C with built-in rechargeable battery</li> <li>· Charger</li> <li>· Remote display FRD 807 with suction pad and batteries</li> <li>· Hard carrying case</li> </ul>



# FRD 807 Remote Display

1 Suction pad attachment



TECHNICAL DATA	FRD 807	SUPPLIED WITH REMOTE DISPLAY FRD 807
		ART.-NO. 264540
Wireless (RF) communication range	10 m	<ul style="list-style-type: none"> <li>· Remote display FRD 807</li> <li>· Suction pad</li> <li>· Batteries</li> </ul>
Communication channels	3	
Machine connection:	<ul style="list-style-type: none"> <li>· integrated magnetic pads</li> <li>· strong suction pad for cabin windscreen</li> </ul>	
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

RECEIVERS  
FOR LASERS

# 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		SUPPLIED WITH
<ul style="list-style-type: none"> <li>· Robust metal housing</li> <li>· Supplied in carton comprising N32, 5 m levelling staff and tripod for convenient storage and delivery</li> </ul>		<b>N 32-SET (400 GON &amp; 360°)</b> <ul style="list-style-type: none"> <li>· N 32 level with carrying case</li> <li>· Aluminium tripod</li> <li>· 5 m levelling staff</li> <li>· Carrying case</li> </ul>

# GFN 1 Automatic Level suitable for all construction sites

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



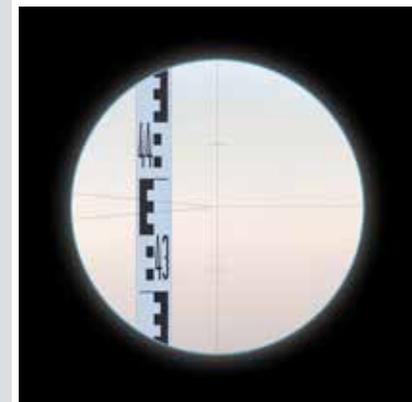
TECHNICAL DATA		GFN 1	FEATURES		SUPPLIED WITH GFN 1 SET			
Mean error for 1 km double levelling		± 1,5 mm	<ul style="list-style-type: none"> <li>· Robust metal housing with handle for comfortable handling</li> <li>· Bubble reading mirror</li> <li>· Optical sight for quick alignment to a levelling staff</li> </ul>		ART-NO. 400 GON	200201		
Telescope magnification		32 x			ART-NO. 360°	200206		
Objective diameter		36 mm			<ul style="list-style-type: none"> <li>· GFN 1 Level with carrying case</li> <li>· Aluminium tripod</li> <li>· 5 m levelling staff</li> <li>· Set carton</li> </ul> 			
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						
FEATURES		SUPPLIED WITH GFN 1						
<ul style="list-style-type: none"> <li>· Adjustment pin</li> <li>· Carrying case</li> </ul>			ART-NO. 400 GON	200200				
			ART-NO. 360°	200205				

# 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



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



**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"> <li>· Robust metal housing with handle for comfortable handling</li> <li>· Reticle in wedge-shape for most accurate reading</li> <li>· Well protected internal circle</li> <li>· Compensator test button</li> <li>· Bubble reading mirror</li> </ul>	ART.-NO. 400 GON 200220
Telescope magnification	32 x		ART.-NO. 360° 200225
Objective diameter	40 mm		· Adjustment pin
Shortest focussing distance	0,6 m		· Plumb bob
Working range of compensator	± 15'		· Carrying case
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		



# 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	<ul style="list-style-type: none"> <li>· Built-in optical plummet</li> <li>· Circular bubble, plate level</li> <li>· Telescope vial</li> <li>· Circle orientation device</li> <li>· Available in 400 gon or 360°</li> </ul>
Objective aperture	30 mm	
Shortest focusing distance	1.2 m	
Direct reading	0.1 gon	
Estimation	10 mgon	
Temperature range	-40 °C – +50 °C	
Weight	2.0 kg	

# 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	
<ul style="list-style-type: none"> <li>· Tribrach</li> <li>· Rechargeable battery</li> <li>· Charger</li> <li>· Battery compartment for alkaline batteries</li> <li>· Container</li> </ul>	

TECHNICAL DATA	FEN 132	FEATURES
Magnification	30 x	<ul style="list-style-type: none"> <li>· Large easy-to-read LCD</li> <li>· Laser plummet for easy set up over the ground point</li> <li>· Illumination of LCD and field of view</li> <li>· Horizontal circle: Hold-Function, 0-set at any desired position, clockwise/anti-clockwise reading</li> <li>· Vertical circle: reading in gon / degrees / percent</li> </ul>
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	

# 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

ART.-NO. 120

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

- Measuring Wheel
- Carrying case with shoulder strap

## FEATURES

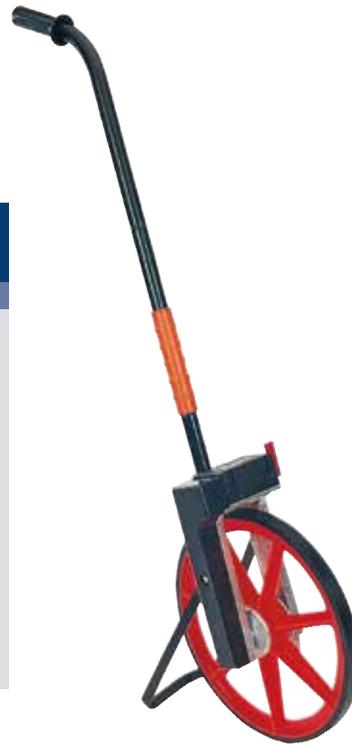
- Ergonomic handle with non-slip pistol grip
- Brake and «0» reset integrated into the handle for ease of use
- Smallest unit of measurement 10 cm
- Counter adds when moving forward and subtracts in reverse
- Movable pointer to ensure accuracy of starting point and finishing position
- Large folding stand for stability
- Coated wheel for excellent traction over a variety of surfaces

## M 10 Precision Measuring Wheel

M 10

ART-NO. 110

- 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

- Same as M 10, however:
- 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.



MEASURING INSTRUMENTS

### 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

- Tape width: 13 mm
- Graduation in mm
- Easy to grip
- Accuracy: EEC class II





## 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

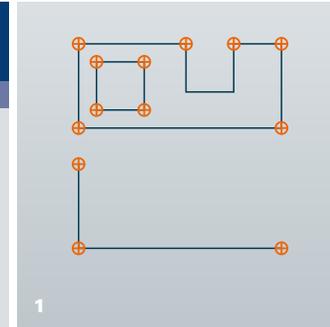
ART.-NO. 6135

- Scale Master Pro XE
- Case
- Batteries
- Manual

### OPTIONAL USB-CABLE

ART.-NO. 5001B

- USB cable for data transfer to PC



1

1 Examples

## Laser EasyFix 5 m Telescopic Rule

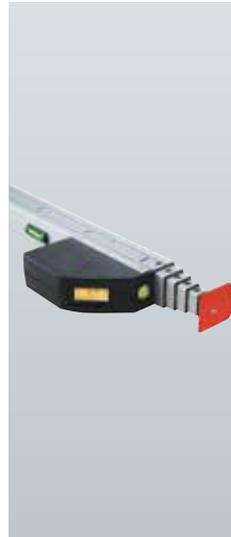


### LASER EASYFIX 5 M

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

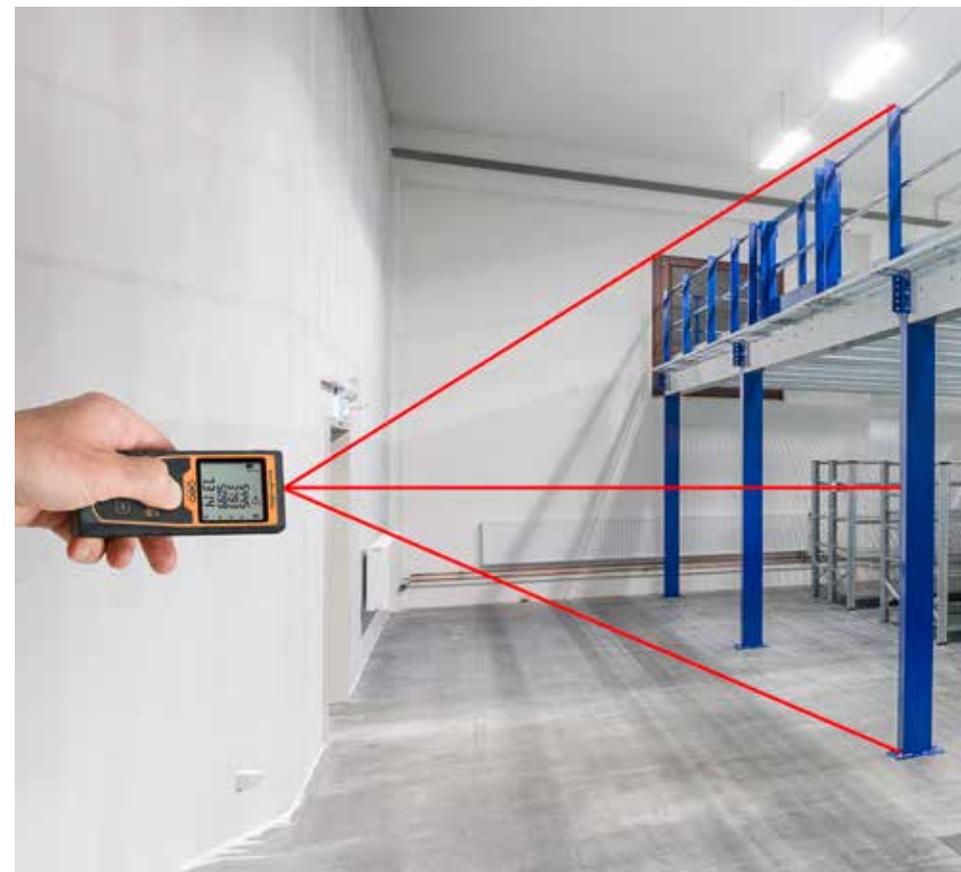
ART.-NO. 410 3 m, erect

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

# 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



MEASURING INSTRUMENTS

SUPPLIED WITH GEODIST® 50	
ART.-NO. 300150	
· Holster	
· Batteries	

TECHNICAL DATA	GEODIST® 50	FEATURES
Accuracy	± 2,0 mm	<ul style="list-style-type: none"> <li>· Single/continuous measurement</li> <li>· Maximum/minimum measurement</li> <li>· Area and volume</li> <li>· Painter function</li> <li>· Plus-/minus</li> <li>· Pythagoras 1, partial height (2 points)</li> <li>· Pythagoras 2, overall height (3 points)</li> <li>· Point of reference: front, rear</li> <li>· Data storage (last 10 values)</li> <li>· mm, ft, inch</li> <li>· Display illuminated</li> <li>· Acoustic signal to confirm measurement</li> <li>· Automatic power off</li> </ul>
Measuring distance	0,2 to 50 m	
Laser class	2	
Dust/water protection	IP 54	
Dimensions	120 x 45 x 26 mm	
Temperature range	0 to 40°C	
Power supply	2 x AAA alkaline batteries	
Weight (with batteries)	120g	

# 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

ART.-NO. 300130

- Holster
- Batteries

### TECHNICAL DATA

### GEODIST® 30

Accuracy	± 2,0 mm
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



### 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

### 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

### 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"> <li>· Holster</li> <li>· Batteries</li> </ul>	
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"> <li>· Distance measurement</li> <li>· Permanent measurement</li> <li>· Bluetooth® Smart</li> <li>· Leica Disto™ sketch app</li> <li>· Illumination of display</li> <li>· mm, ft, inch</li> <li>· Acoustic signal confirming the measurement</li> </ul>	



## 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"> <li>· Permanent measurement area</li> <li>· Bluetooth® Smart</li> <li>· Leica Disto™ sketch app</li> <li>· Illumination of display</li> <li>· mm, ft, inch</li> <li>· Acoustic signal confirming the measurement</li> </ul>	<ul style="list-style-type: none"> <li>· Holster</li> <li>· Batteries</li> </ul>
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 X310

» Solid and versatile, protected against water jets and dust-tight.



TECHNICAL DATA	DISTO X310	FEATURES	SUPPLIED WITH DISTO X310
ART-NO. 300012			
Distance	0.05 – 80 m	<ul style="list-style-type: none"> <li>· Minimum / maximum</li> <li>· Permanent measurement</li> <li>· Plus / minus</li> <li>· Area / volume</li> <li>· Room function summary</li> <li>· Height measurement (Pythagoras)</li> <li>· Measurement despite obstructions</li> <li>· Stake-out function</li> <li>· 360° TILT sensor</li> <li>· mm, ft, inch</li> <li>· Multi-functional endpiece</li> </ul>	<ul style="list-style-type: none"> <li>· Holster</li> <li>· Hand loop</li> <li>· Batteries</li> </ul>
Accuracy	± 1.0 mm		
Dust / water protection	IP 65		
Weight	155 g		
Laser class	2		
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.



SUPPLIED WITH DISTO D2	
ART.-NO. 300002	
<ul style="list-style-type: none"> <li>· Holster</li> <li>· Batteries</li> </ul>	
Range and accuracy test according to DIN ISO 16331-1	

TECHNICAL DATA	DISTO D2
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Accuracy	± 1,5 mm
Distance	100 m
Laser class	2
Dust / water protection	IP 54
Weight (with batteries)	100 g

FEATURES	
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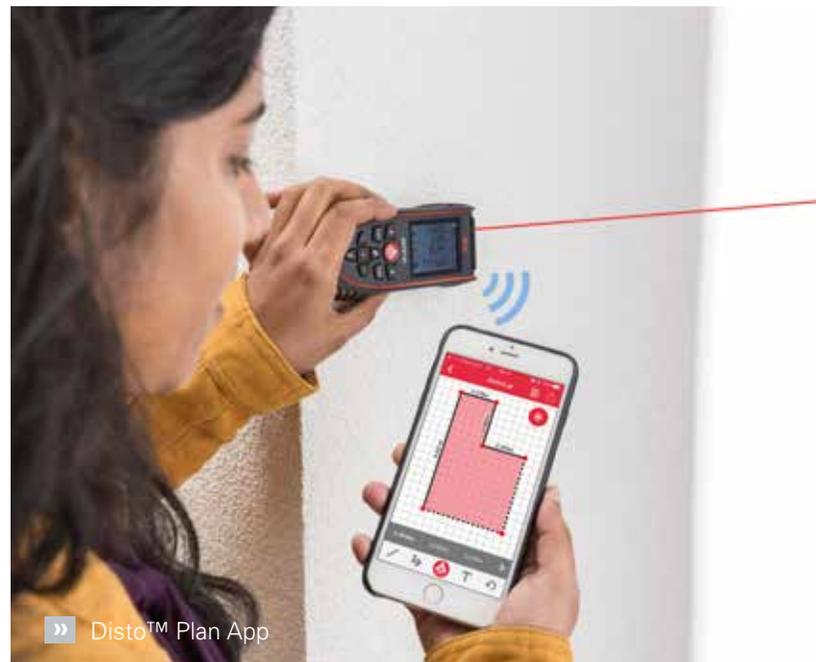
- Subtraction / addition
- Minimum / maximum measurements
- Area / volume calculation
- Memory: Last 10 values
- Multifunctional end-piece
- Bluetooth® Smart
- Leica Disto™ sketch App
- Illuminated display
- mm, ft, inch
- Beep (switchable on/off)
- Pythagoras functions

# 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		TECHNICAL DATA	DISTO X3
ART.-NO. 300300			
<ul style="list-style-type: none"> <li>· Holster</li> <li>· Batteries</li> </ul>		Accuracy	± 1,0 mm
Range and accuracy test according to DIN ISO 16331-1		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



» Disto™ Plan App

FEATURES
----------

- 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.



TECHNICAL DATA	DISTO X4
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

# 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

FEATURES	SUPPLIED WITH DISTO X4
<ul style="list-style-type: none"> <li>· X-Range Power Technology</li> <li>· Tilt sensor</li> <li>· Memory of last 20 measurements</li> <li>· DISTO™ transfer for Windows</li> <li>· DISTO™ Plan app for iOS and Android</li> <li>· Smart Room function support</li> <li>· Multifunctional endpiece with automatic reference detection</li> <li>· General data interface: Bluetooth® Smart</li> <li>· Data interface for 3D point data: Bluetooth® Smart</li> <li>· 2 m drop tested</li> </ul>	<p>ART.-NO. 300400</p> <ul style="list-style-type: none"> <li>· Holster</li> <li>· Batteries</li> </ul> <p>Range and accuracy test according to DIN ISO 16331-1</p>



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

## DISTO D510



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

TECHNICAL DATA	DISTO D510	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 300007</b>
Distance	0.05 – 200 m	<ul style="list-style-type: none"> <li>· Minimum / maximum</li> <li>· Permanent measurement</li> <li>· Plus / minus</li> <li>· Area / volume</li> <li>· Room function summary</li> <li>· Indirect height measurement (Pythagoras)</li> <li>· Measurement despite obstructions</li> <li>· Measurement of facade areas</li> <li>· 360° TILT sensor</li> <li>· Bluetooth® smart</li> </ul>	<ul style="list-style-type: none"> <li>· Holster</li> <li>· Hand loop</li> <li>· Batteries</li> </ul> <p>Range and accuracy test according to DIN ISO 16331-1</p>
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
			<b>ART.-NO. 300009</b>
Distance	0.05–200 m	<ul style="list-style-type: none"> <li>· Measurements despite obstructions</li> <li>· Measurement of facade areas</li> <li>· Bluetooth®</li> <li>· 360° TILT sensor for measurement of any slope (even overhead)</li> </ul>	<ul style="list-style-type: none"> <li>· Holster</li> <li>· Hand loop</li> <li>· Batteries</li> </ul> <p>Range and accuracy test according to DIN ISO 16331-1</p>
Accuracy	± 1.0 mm		
Dust / water protection	IP 54		
Weight	238 g		
Laser class	2		

FEATURES
<ul style="list-style-type: none"> <li>· Minimum / maximum</li> <li>· Permanent measurement</li> <li>· Plus / minus</li> <li>· Area / volume</li> <li>· Room function summary</li> <li>· Indirect height measurement (Pythagoras)</li> </ul>

EXTERIOR PACKAGE
<b>ART.-NO. 300013</b>

## DISTO D810 touch SET

» The D810 touch SET includes a D810, a TRI70 Tripod, Leica's patented FTA360 Fine Tune Tripod Adapter and a hard case to keep it all organized.



DISTO D810 TOUCH SET
<b>ART.-NO. 300013</b>



» DISTO D810 touch

# 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
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· Magnetic housing</li> <li>· 1/4" thread for camera tripod</li> </ul>	ART.-NO. 610010
Resolution	0.1° / 0.1%		· Padded bag
Accuracy	± 0.1°		· Batteries
Measuring units	°, %, mm/m, in/ft		
Power supply	3 x AA Alkaline		
Operating time	600 h		
Temperature range	-10°C - +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
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· 180° rotatable display</li> <li>· Visible laser beam to extend working range</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· Magnetic housing</li> <li>· 1/4" thread for camera tripod</li> </ul>	ART.-NO. 630010
Resolution	0.1° / 0.1 %		· Padded bag
Accuracy	± 0.1°		· Batteries
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 – +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
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· Visible laser beam to extend working range</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· 1/4" thread for camera tripod</li> </ul>
Resolution	0.1° / 0.1 %	
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 – +45 °C	
Weight (incl. batteries)	0.86 kg	
Size	600 x 60 x 32 mm	
		SUPPLIED WITH S-DIGIT 60 +
		ART.-NO. 620010
		<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>



1



2



## 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 – +45 °C	-10 °C – +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 +	FEATURES	
<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> </ul>	<ul style="list-style-type: none"> <li>· 180° rotatable display</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· 1 or 2 recessed hand grips for ergonomic use</li> </ul>

## 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 – + 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

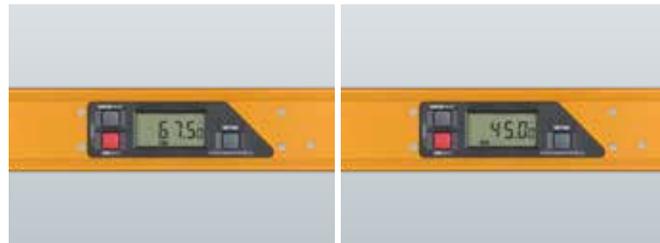
ART-NO. 650050

- 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 – +45 °C
Weight (incl. Batteries)	1.3 kg
Size	520 x 63 x 30 mm
Unfolded length	1000 mm

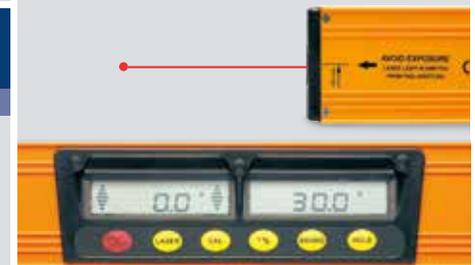
### SUPPLIED WITH MULTI-DIGIT PRO +

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



# 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



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.



TECHNICAL DATA	M-LEVEL ECO
Profile (cross-section)	62 x 30 mm
Accuracy	≤ 1 mm / m
Vial(s) horizontal	1
Vial(s) vertical	2



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





# Spirit Level M-Level TPZ

## Aluminium die-cast spirit level

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



TECHNICAL DATA	M-LEVEL TPZ
Accuracy	
Normal position	0.75 mm / m
Other positions	0.75 mm / m
Vial(s) horizontal	1
Vial(s) vertical	2

FEATURES
· 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

MEASURING INSTRUMENTS

# 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.



» 17 mm

» 9 mm

» **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

TECHNICAL DATA	FVE 100
<b>Camera head</b>	
Viewable angle	0° and 180°
Focal length	6–7 cm
Viewable distance	5–15 cm
Diameter of camera head	17 mm
Light source	LED
<b>Display</b>	
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
<b>Various</b>	
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 – + 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"> <li>· Water proof camera head and probe</li> <li>· 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas</li> <li>· Camera head with LED lighting</li> <li>· Immediate transfer of the colour image to the large LCD display</li> <li>· 180° image rotation at the press of a button</li> <li>· Direct transfer of image to television or notebook</li> <li>· Accessories:                             <ul style="list-style-type: none"> <li>· Hook and magnet attachments for object retrieval</li> <li>· Angle mirror attachment to "view around corners"</li> <li>· Powerful Li-Ion battery with charger</li> </ul> </li> </ul>

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

# 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

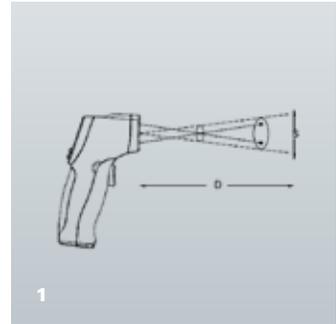


TECHNICAL DATA	FVE 150	FEATURES	SUPPLIED WITH FVE 150
			<b>ART.-NO. 800710</b>
<b>Camera head</b>		<ul style="list-style-type: none"> <li>· Water proof camera head and probe</li> <li>· 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas</li> <li>· Camera head with LED lighting</li> <li>· Immediate transfer of the colour image to the large LCD display</li> <li>· 180° image rotation at the press of a button</li> <li>· Internal memory or SD-card to store images and video sequences</li> <li>· 4 GB SD-card included (supports up to 8 GB)</li> <li>· Date and time indication on the display</li> <li>· Transmission of video clips / images onto television or PC for editing or documentation</li> <li>· Multi-language menu (DE, EN, FR, ES, IT, FI)</li> <li>· Accessories: see FVE 100</li> </ul>	<ul style="list-style-type: none"> <li>· Video borescope</li> <li>· 1 m flexible gooseneck probe</li> <li>· TV cable</li> <li>· USB cable</li> <li>· Charger</li> <li>· Magnet</li> <li>· Hook</li> <li>· Mirror</li> <li>· 4 GB SD-card</li> <li>· Container</li> </ul>
Viewable angle	0° and 180°		
Focal length	6–7 cm		
Viewable distance	5–15 cm		
Diameter of camera head	17 mm		
Light source	LED		
<b>Display</b>			
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		
<b>Various</b>			
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 – + 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.



## 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

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 – +550 °C	-35 °C – +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

## SUPPLIED WITH FIRT 550-POCKET

- ART-NO. 800001
- Case and battery

## SUPPLIED WITH FIRT 800-POCKET

- ART-NO. 800002
- 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
D(istance):S(pot)	50:1
Temperature range	-50 °C – +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
	1 °C over 1000 °C
Temperature range Type-K probe	-50 °C – +1370 °C
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C
Accuracy (TK) (-50 °C – +1370 °C)	± 0.5 % ± 1.5 °C
Laser class	2
Weight	0.45 kg
Dimensions	205 x 62 x 155 mm

FEATURES
· 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

SUPPLIED WITH FIRT 1000 DATAVISION
<b>ART.-NO. 800030</b>
· Battery
· USB cable
· Mini tripod
· Type-K temperature probe
· Case

- 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



1



2



3



4



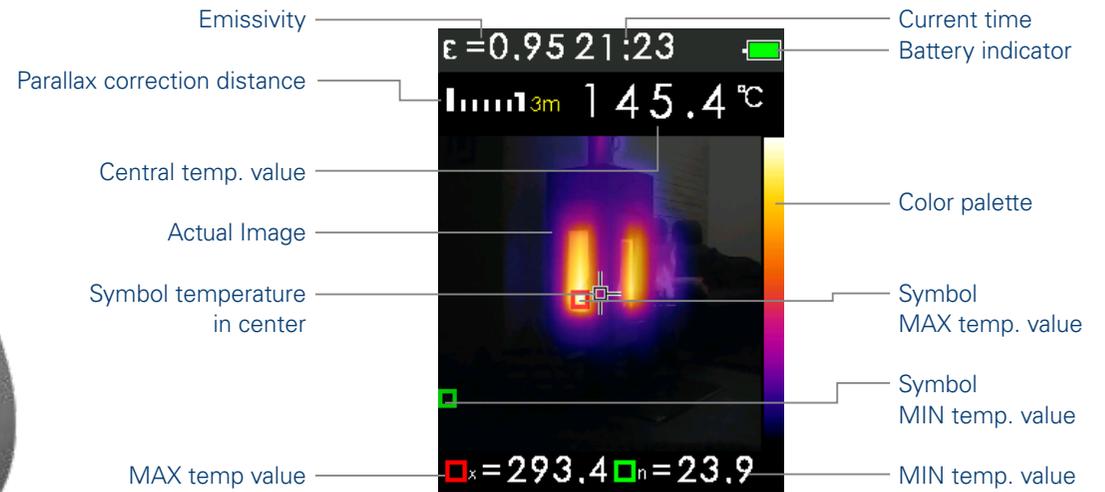
5

# 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.



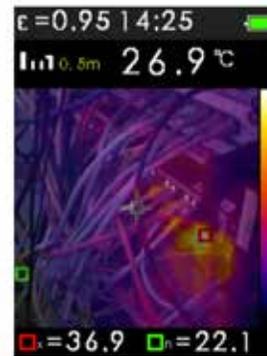
FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> <li>· Automatic indication of hot / cold spot with configurable alarm function</li> <li>· PIP-function for blending of visible and infrared image (0-100%) for optimized orientation in the picture</li> <li>· 6 colour palettes</li> <li>· Memory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



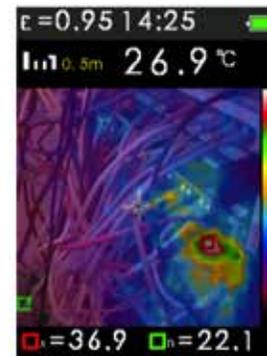
» grey (black)



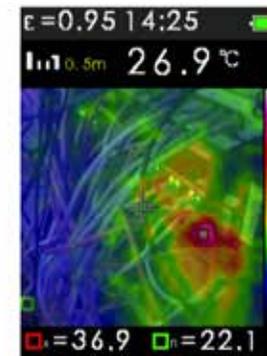
» grey (white)



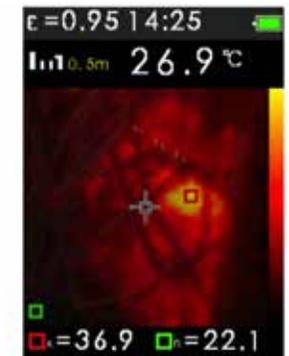
» Metal



» Rainbow



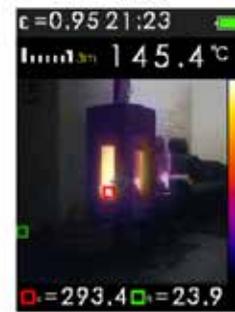
» High Contrast



» Hot Metal



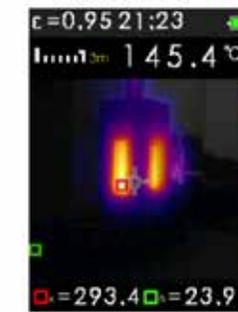
» 0%



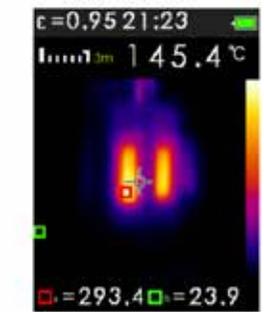
» 25%



» 50%



» 75%



» 100%

TECHNICAL DATA FTI 300		TECHNICAL DATA FTI 300	
<b>Thermal imaging</b>		<b>Memory / Data transfer</b>	
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	<b>Other</b>	
Colour palettes	6 - greyscale (white hot), greyscale (black hot), ironbow, rainbow, rainbow (high contrast), hot metal	Power supply	3.7 V Li-Ion battery
Display	2.2" TFT colour LCD, 320 x 240 pixel	Menu languages	EN, DE, FR, ES, IT
PIP (Blending fusion)	IR image with visible image in 6 steps (0 – 100%)	Weight	410 g
<b>Infrared temperature measurement</b>		Dimensions	205 x 155 x 62 mm
Temperature range	-20°C - +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.

TECHNICAL DATA	FIRT 1600 DATA	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 800020</b>
D(istance):S(pot)	50:1	<ul style="list-style-type: none"> <li>· For non-contact temperature measurement with laser dot</li> <li>· 150 ms fast sampling with 1 % accuracy</li> <li>· High temperature range</li> <li>· Built-in dual laser pointers for accurate targeting</li> <li>· Permanent measuring</li> <li>· Compatible with all standard connector Type-K thermocouples</li> <li>· USB interface</li> <li>· Memory for 99 measurements</li> <li>· Easy transmission of data to PC via USB interface</li> </ul>	<ul style="list-style-type: none"> <li>· Battery</li> <li>· USB cable</li> <li>· Mini tripod</li> <li>· Type-K temperature probe</li> <li>· Case</li> </ul>
Temperature range	-50 °C – +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 – +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		

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

# 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	FHT 60	FHT 100
ART.-NO.	800100	800110
Temperature range	-20 °C – +60 °C	-30 °C – +100 °C
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 – +100 °C
Wet bulb temperature	no	0 °C – +80 °C
Accuracies:		
Humidity	± 3.5 % RH	± 2 % RH
Temperature	± 2 °C	± 0.5 °C
Dewpoint	–	± 0.5 °C
Wet bulb	–	± 0.5 °C

FEATURES
· Fast measurement of relative humidity and temperature
<b>FHT 100</b>
· Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature)

SUPPLIED WITH
FHT 60 & FHT 100
· Case
· Battery

TECHNICAL DATA	FHM 10	FEATURES
SUPPLIED WITH FHM 10		
ART.-NO. 800310		
· CR2032 batteries		
Measuring range wood	6 % – 44 %	· Measurement principle: electrical resistance · Dual display for wood and construction materials · Replaceable 8 mm measuring pins · Protective cap with integrated function and battery check · Automatic power-off · Impact resistant housing
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 – +60 °C
Dimensions	180 mm x 50 mm x 31 mm
Weight	175 g

\* Average adjustment for European wood at 20°C

### FEATURES

- 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

- Moisture and temperature probe
- Padded bag
- 2 x spare measuring pins
- 2 x AAA Batteries

1 Moisture and temperature probe



1

# 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
· Indication of minimum / maximum values
· Sensor type: metal spheroid

SUPPLIED WITH
<b>ART.-NO. 800650</b>
· 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		
	<b>Measuring range</b>	<b>Resolution</b>	<b>Accuracy</b>
<b>Air velocity</b>			
m/s	0.40 – 30.00	0.01	± 3 % ± 0.20 m/s
ft/min	80 – 5900	1	± 3 % ± 40 ft/min
km/h	1.4 – 108.0	0.1	± 3 % ± 0.8 km/h
mph	0.9 – 67.0	0.1	± 3 % ± 0.4 mph
knots	0.8 – 58.0	0.1	± 3 % ± 0.4 knots
	<b>Measuring range</b>	<b>Resolution</b>	<b>Accuracy</b>
<b>Air flow</b>			
CMM (m³/min)	0 – 999,900	0.001	0 – 999.9 m²
CFM (ft³/min)	0 – 999,900	0.001	0 – 999.9 ft²
	<b>Measuring range</b>	<b>Resolution</b>	<b>Accuracy</b>
<b>Air temperature</b>			
°C	-10 °C – +60 °C	0.1 °C	± 2 °C
°F	14 °F – 140 °F	0.1 °F	± 4 °F
<b>Various</b>			
Power supply	1 x 9 V		
Operating time	80 h		
Dimensions	75 x 203 x 50 mm		
Weight	280 g		

FEATURES
· 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
<b>ART.-NO. 800450</b>
· 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.

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	<b>PROPERTIES</b>
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 – +40 °C	
Operation humidity	< 80 % RH	

SUPPLIED WITH
ART.-NO. 800470
· Batteries

TECHNICAL DATA	FGD 1	PROPERTIES
Sensitivity	50 ppm	· 40 cm gooseneck detector · Visual leak detection by LED indicators · Precision sensor detects even the smallest leaks · Fast response of less than two seconds · Includes earphone jack
Sensor type	Low power semi-conductor	
Warm-up time	approx. 60 sec	
Response time	< 2 sec	
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	

# 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**

	<b>Probe F</b>	<b>Probe N</b>
Working principle	Magnetic induction	Eddy current principle
Measuring range	0 – 1250 µm 0 – 49.21 mils	0 – 1250 µm 0 – 49.21 mils
Guaranteed tolerance (of reading)	0 – 850 µm (± 3 % +1 µm) 0 – 33.46 mils (± 3 % +0.039 mils)	0 – 850 µm (± 3 % +1.5 µm) 0 – 33.46 mils (± 3 % +0.059 mils)
	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)
Resolution 0 – 50 µm	0.1 µm	0.1 µm
Resolution 0 – 1.968 mils	0.001 mils	0.001 mils
Diameter of minimum area	7 mm	5 mm
Basic thickness of material	0.5 mm	0.3 mm
Working temperature	0 °C – +40 °C	0 °C – +40 °C
Working relative humidity	20 % ~ 90 %	20 % ~ 90 %
Power supply	2 x AAA Alkaline	2 x AAA Alkaline
Size	113.5 x 54 x 27 mm	113.5 x 54 x 27 mm
Weight	110 g	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, sensor.

**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 range 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

# 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	SUPPLIED WITH FT 1300-1 & FT 1300-2
ART.-NO.	800400	800410	
Scanfunction	1 measurement	2 measurements simultaneously or temperature difference	<ul style="list-style-type: none"> <li>Flexible wire probe TP-300</li> <li>Set of batteries</li> <li>Case</li> </ul>
Sampling rate	2.5 x per second	2.5 x per second	
Accuracy	± 0,5 % / ± 1 °C	± 0,5 % / ± 1 °C	<b>FEATURES</b>
Display resolution	0.1 °C / 1 °C	0.1 °C / 1 °C	
Temperature range	-50 °C – +1300 °C	-50 °C – +1300 °C	<ul style="list-style-type: none"> <li>Indication of maximum value (MAX)</li> <li>Data HOLD function</li> <li>Large display (45 mm) with illumination</li> </ul>
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	

# FT 1000-Pocket Digital Thermometer

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



TECHNICAL DATA	FT 1000-POCKET
Temperature range	-20 °C – +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	SUPPLIED WITH
<ul style="list-style-type: none"> <li>Handy thermometer with immersion probe</li> <li>Pocket-size, light weight, easy to operate</li> </ul>	<b>ART.-NO. 800420</b> <ul style="list-style-type: none"> <li>Set of batteries</li> <li>Incorporated all-purpose probe</li> </ul>

# 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"> <li>· All-purpose probe TP-500</li> <li>· Set of batteries</li> <li>· Case</li> <li>· Testing cable</li> </ul>

TECHNICAL DATA		FMM 5	
<b>Multimeter</b>	<b>Max. Range</b>	<b>Resolution</b>	<b>Accuracy</b>
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*
<b>Environment</b>	<b>Max. Range</b>	<b>Resolution</b>	<b>Accuracy</b>
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 – +200 °C	0.1 °C	± 3.0 % ± 1*
	-20 °C – +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 – +300 °C	FT1300-1, -2, FMM5	800900
TP-500	All-purpose probe (metal tip length 7 mm)	85 cm	-50 °C – +900 °C	FT1300-1, -2, FMM5	800901
TP-550	All-purpose probe (metal tip length 15.5 cm)	94 cm	-50 °C – +900 °C	FT1300-1, -2, FMM5	800906
NR-88B	Flexible steel probe	100 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800902
NR-31B	Surface temperature probe	12 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800903
NR-33	Right angle surface temperature probe	34 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800904
NR-38	Air temperature probe	21 cm	-50 °C – +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.





**E**

10.3

**E**

11

## 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.

## WH 1 / WH 2 Wall and Ceiling Mount

- » Robust mount for use on walls and ceilings



» WH 1



» WH 2

Example 1



## 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

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.

### ADAPTER FOR S-DIGIT MINI +

ART.-NO. 290750



» Example

## 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.

## Adapter 5814



### ADAPTER 5814

ART.-NO. 290550

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

## 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



» FCA-L



» FCA-E

- » **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 FOR LASER	FCA-E FOR RECIEVER
ART.-NO. 290820	ART.-NO. 290830



## 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 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 30-XS (3.00 m) Elevating Tripod



FS 30-XS

ART.-NO. 165

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

- 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 Aluminium Tripod



FS 40

ART.-NO. 150

- 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

## FS 30-S Elevating Tripod



FS 30-S

ART.-NO. 155

- 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

## FS 30-M Elevating Tripod



FS 30-M

ART.-NO. 158

- 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

## FS 30-L Elevating Tripod



FS 30-L

ART.-NO. 156

- 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

## FS 50-M (2.20 m) Elevating Tripod

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



FS 50-M

ART.-NO. 164

- 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

## FS 50-L (2.90 m) Elevating Tripod



FS 50-L

ART.-NO. 166

- 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

## Builders' Tripod BT Aluminium tripod



### BUILDERS TRIPOD BT

ART.-NO. 161

- Flat head
- 92 – 147 cm
- 3.2 kg

- For automatic levels
- Quick clamp system
- Flat head
- Shoulder carrying strap

## FS 24 FS 24 W/S Wooden Tripod



### FS 24

ART.-NO. 154

- Flat head
- 105 – 170 cm
- 6.5 kg

### FS 24 W/S

ART.-NO. 154 W/S

- Same as FS 24 tripod, however, with screw clamp system

- Robust wooden tripod for theodolites and total stations
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 140 mm

## FS 30-XL (3.80 m) Elevating Tripod



### FS 30-XL

ART.-NO. 159

- 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
- Made of aluminium (centre column) and fibre glass (tripod)
- Built-in circular bubble

## FS 20 FS 20-D Aluminium Tripods



### FS 20

ART.-NO. 151

- Flathead
- 105 – 165 cm
- 3,5 kg

### FS 20-D

ART.-NO. 157

- Domed head
- 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

### Aluminium Tripod FS 20-D

- Same as FS 20 tripod, however, with domed head

## FS 23 FS 23-D FS 23 W/S Aluminium Tripods



### FS 23

ART.-NO. 152

- Flat head
- 105 – 170 cm
- 5.1 kg

### FS 23-D (DOMED HEAD)

ART.-NO. 153

### FS 23 W/S (FLATHEAD)

ART.-NO. 152 W/S

### Aluminium Tripods FS 23

- Ideal for all measuring instruments
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 143 mm

### Aluminium Tripod FS 23-D

- Same as FS 23 tripod, however, with domed head

### Aluminiumstativ FS 23 W/S

- Same as FS 23 tripod, however, with screw clamp system

## 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

## Optional accessories

ROD LEVEL LR7 FORTN 14/15/15-0

ART.-NO. 370

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

CASE FORTN 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



## 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

## 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

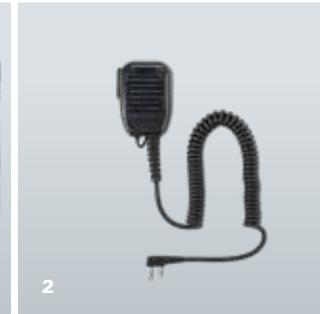
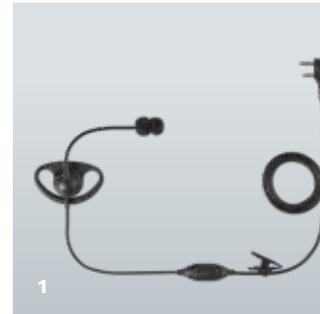
- Length 83 cm
- Weight 0.6 kg

# 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 – +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
<b>F6-HM MICROPHONE</b>	<b>F6-EM EARPHONE</b>
ART.-NO. 870100	ART.-NO. 870150
· F6-HM hand microphone with jacket clip	· F6-EM earphone / clip microphone

### FEATURES

- 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
- PC programmable (optional):
  - Frequency, functions and settings can be set by the optional programming software

### SUPPLIED WITH

ART.-NO. 870000

- 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

- 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**

- Detection of all kinds of metals
- Handle adjustable, length 114 – 139 cm
- Headphone jack

**SUPPLIED WITH**

ART.-NO. 800800

- 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 1800

» FM 1801

**SUPPLIED WITH  
FM 1801**

**ART.-NO. M800508**

**PADDLE H2-140 MM**



**SUPPLIED WITH  
FM 1800**

**ART.-NO. M800507**

- Carrying case

**PADDLE H2-140 MM  
PADDLE H3-160 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	CAPACITY	DIAMETER	LENGTH	THREAD	
H2					
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 materials: wall paint, emulsion paint, paste, bitumen, sludge, joint sealing compound, filler, bonding agent, etc.



PADDLE	CAPACITY	DIAMETER	LENGTH	THREAD	
H7					
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 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	CAPACITY	DIAMETER	LENGTH	THREAD	
H3					
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 thin-bed adhesives and for larger volumes of liquid materials.



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

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



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

# 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



## Our product range

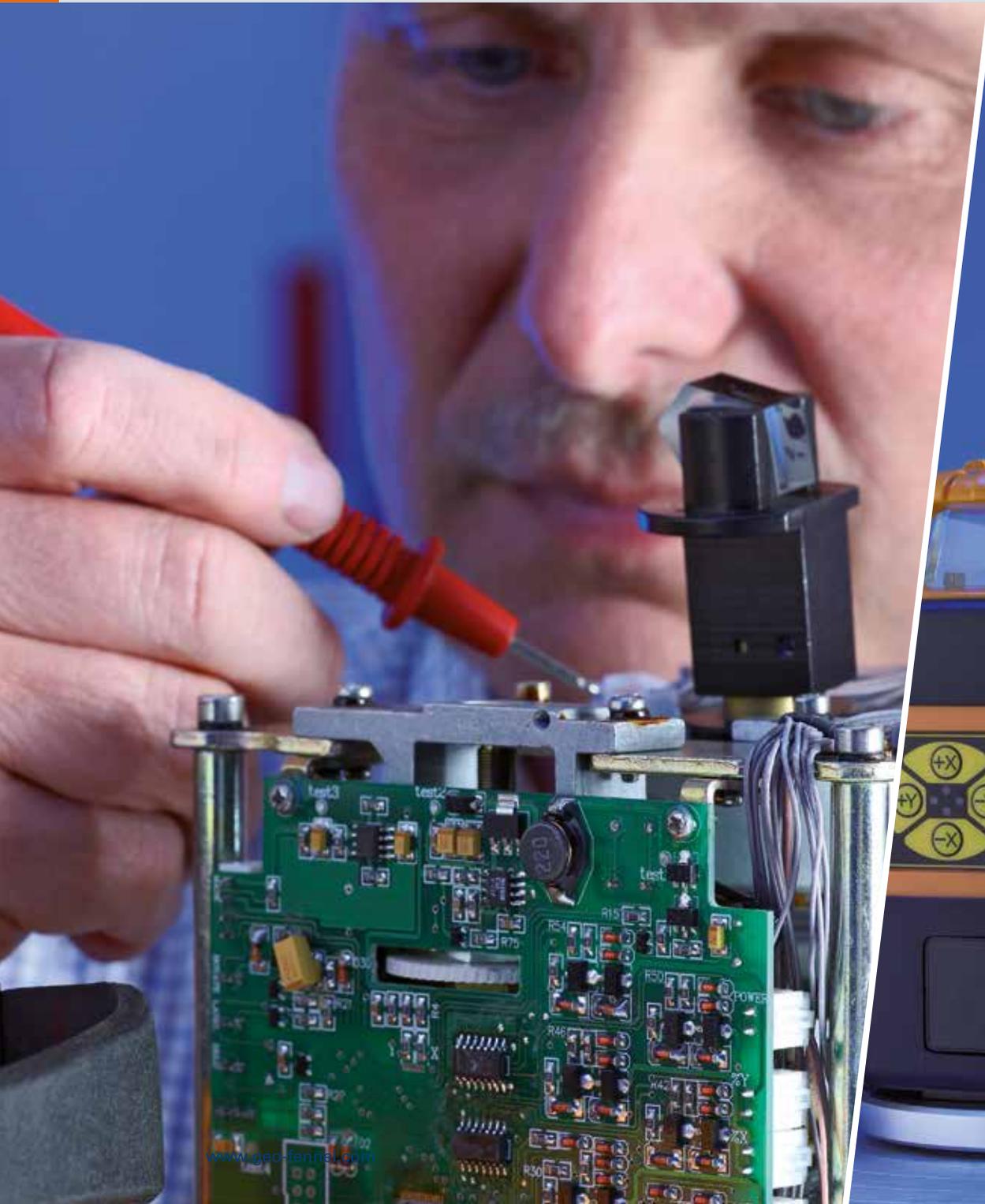
» Our product range includes:

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.

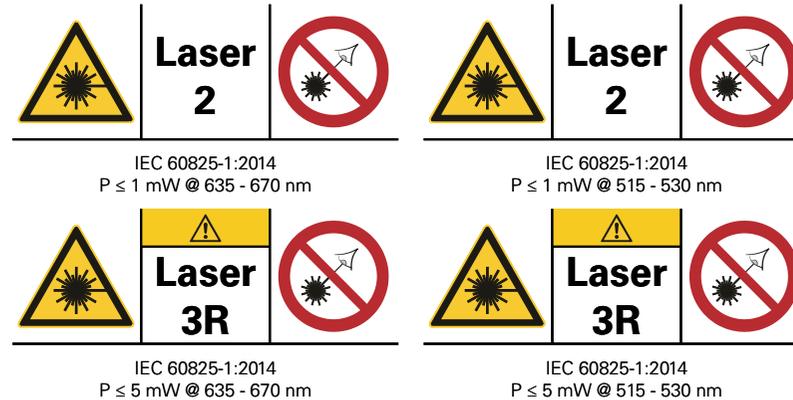


# Laser classification according to DIN EN 60825-1:2014

» 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.

» **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 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.

## GEO-FENNEL PIPE LASERS

The FKL 55 (Art.-No. 455520) and FKL 80 Pipe Laser are classified in laser class 2.

# 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

# 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

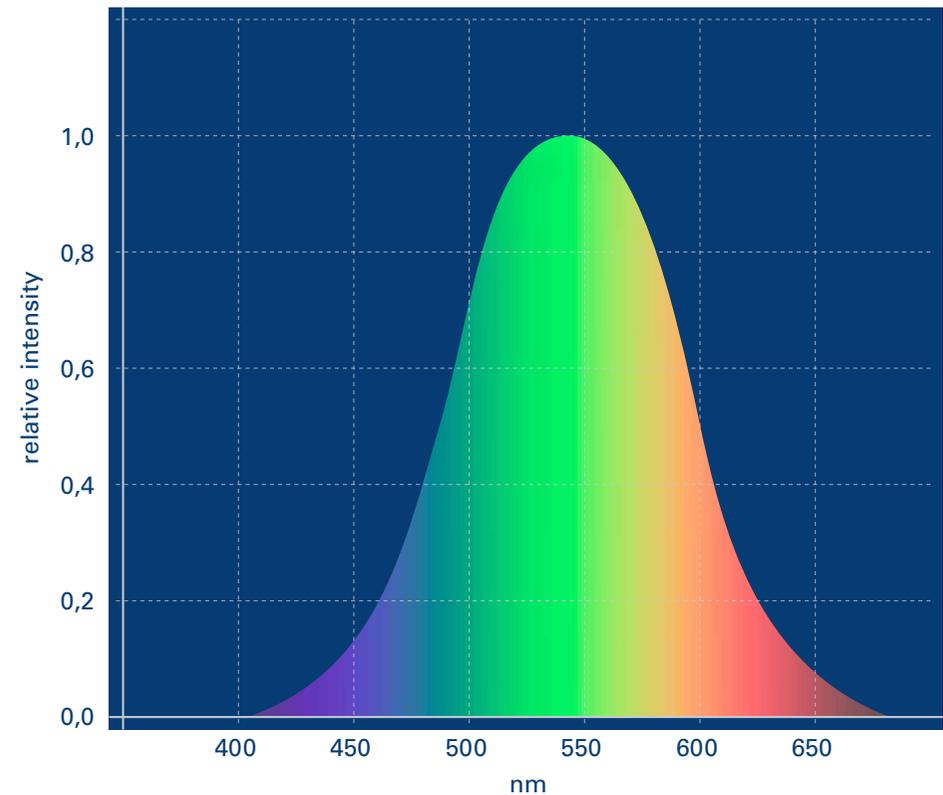
» The human eye can see the different wavelengths (measuring unit 'nm') of the visible colour spectrum in different intensities. The optimum is at 555 nm. Green light is situated in the middle of this range and can be perceived much higher compared to red light.

» 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 265HV-Green 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

- Width 100 cm
- Depth 50 cm
- Height 200 cm

- 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
- 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

- Width 50 cm
- Depth 40 cm
- Height 50 cm

- Metal Housing
- On wooden presentation area 3 products can be fixed with 5/8" tripod screw
- 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

- 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 labels for sales displays and authorized dealers: Help to reach your customers with the marketing material from geo-FENNEL.



» Poster DIN A1



» Label for authorized dealers  
Size: 150 x 108 mm

» Car sticker  
Size: 100 x 114 mm

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





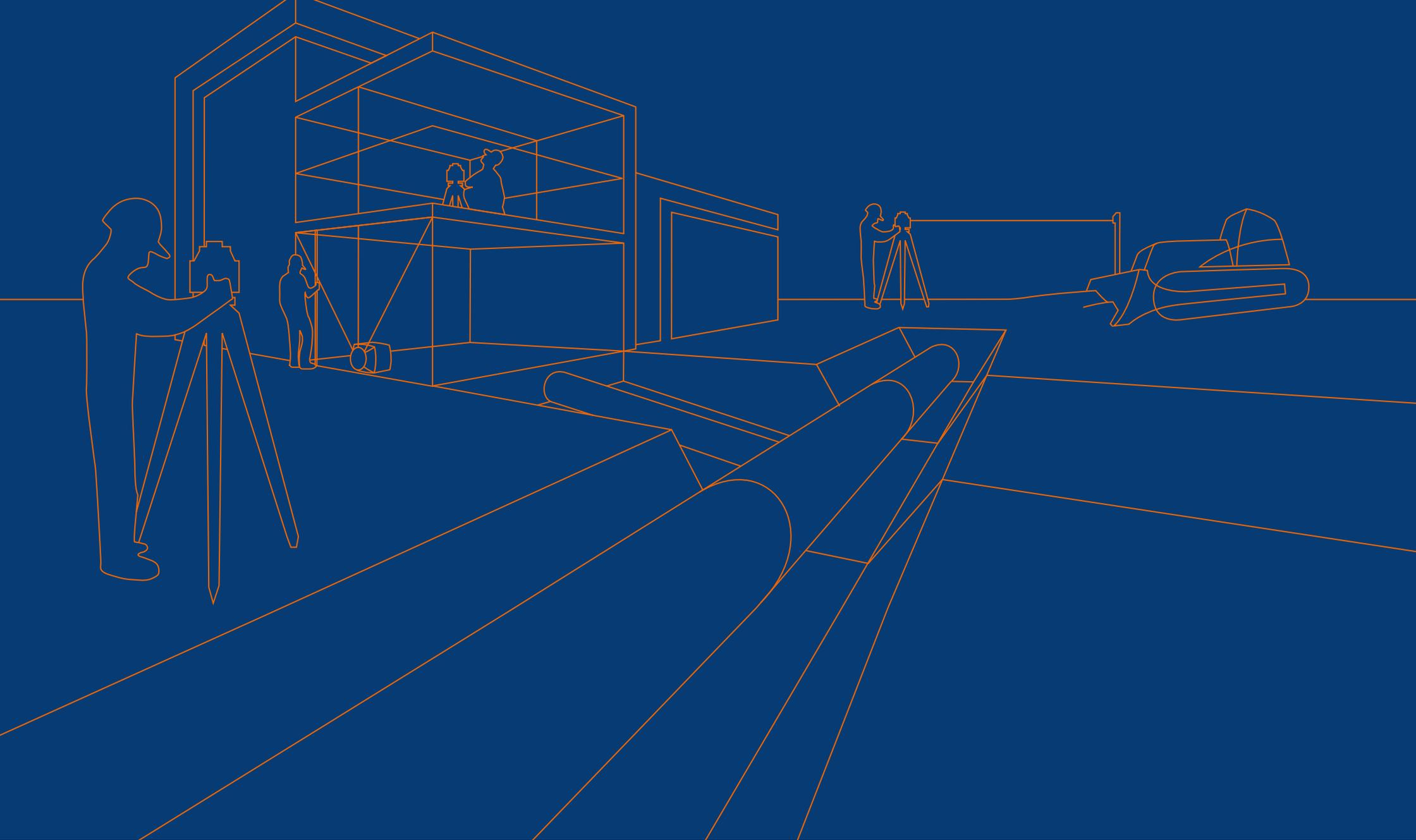
## Tailor-made information.

- » 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](http://www.geo-fennel.com)



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**geo**  
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