



2020

Laser Measuring Tools
Environmental Measuring Instruments



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Tasks Outline of products

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

Trades

	Excavation		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
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		■	■		■		■	■	■	■		■						■		■

Comprehensive Project Management Dashboard - Q3 2024																								
Project Overview					Resource Allocation					Task Progress					Financials					Risk & Compliance				
ID	Name	Manager	Status	Priority	Team Lead	Team A	Team B	Team C	Team D	Task Name	Start Date	End Date	Progress %	Completion Status	Budget (k€)	Actual (k€)	Variance (k€)	ROI (%)	ROI Target	Risk Level	Compliance	Audit Status	Notes	
Phase 1: Planning					Phase 2: Execution					Phase 3: Review					Phase 4: Finalization					Phase 5: Post-project				
Task 1.1: Initial Meeting					Task 2.1: Resource Planning					Task 3.1: Progress Review					Task 4.1: Budget Review					Task 5.1: Final Report				
Task 1.2: Scope Definition					Task 2.2: Task Assignment					Task 3.2: Status Update					Task 4.2: Budget Update					Task 5.2: Lessons Learned				
Task 1.3: Risk Assessment					Task 2.3: Performance Monitoring					Task 3.3: Client Meeting					Task 4.3: Budget Finalization					Task 5.3: Project Closure				
Task 1.4: Communication Plan					Task 2.4: Quality Control					Task 3.4: Documentation					Task 4.4: Budget Finalization					Task 5.4: Project Evaluation				
Task 1.5: Stakeholder Engagement					Task 2.5: Resource Optimization					Task 3.5: Reporting					Task 4.5: Budget Review					Task 5.5: Project Summary				
Task 1.6: Project Kick-off					Task 2.6: Task Completion					Task 3.6: Final Review					Task 4.6: Budget Review					Task 5.6: Project Evaluation				
Task 1.7: Project Kick-off					Task 2.7: Task Completion					Task 3.7: Final Review					Task 4.7: Budget Review					Task 5.7: Project Evaluation				
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Task 1.40: Project Kick-off					Task 2.40: Task Completion					Task 3.40: Final Review					Task 4.40: Budget Review					Task 5.40: Project Evaluation				
Task 1.41: Project Kick-off					Task 2.41: Task Completion																			

geo-FENNEL

New products 2020

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

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

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

Point and Line Laser



CROSSPOINTER5 GREEN SP
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Floor/Wall Line Laser



GEO6-XR GREEN
Page 14

Line Laser



GEO1X-360 GREEN
Page 20

Horizontal and Vertical Laser



FL 220HV
Page 44

Horizontal and Vertical Laser



FL 245HV +

Page 46

Horizontal dual grade Laser



FL 155H-G

Page 52

Single grade horizontal Laser with vertical function



FL 300HV-G EASYGRADE

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GNSS System



FGS LITE

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Measuring Tapes



GEOTAPE 2in1

Page 93

Universal Tripods



FS 24-M W/S

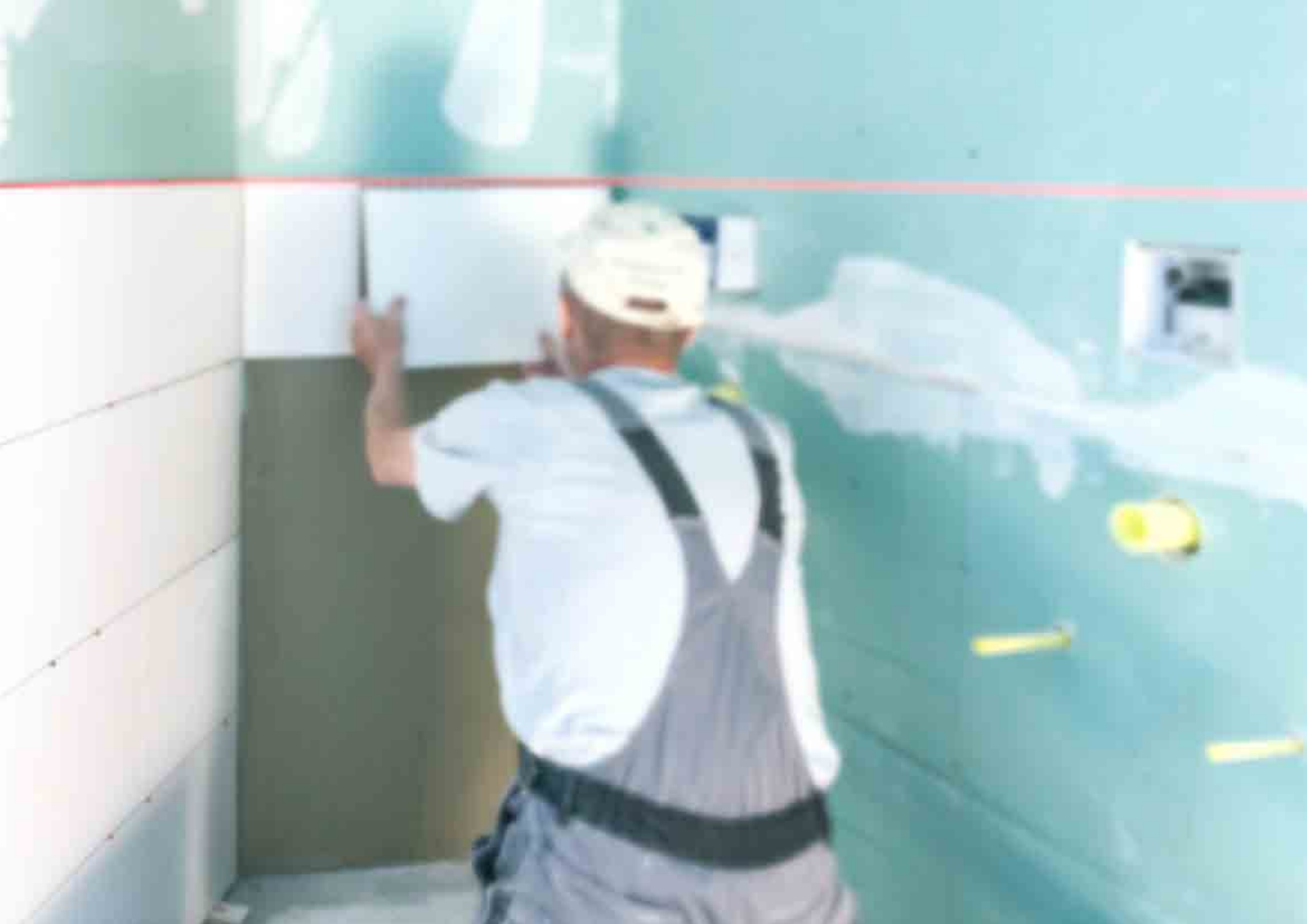
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LINE LASERS

PRECISION IN EVERY ASPECT: OUR ALL-ROUNDERS

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

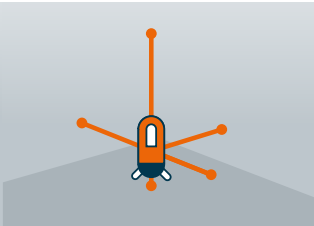
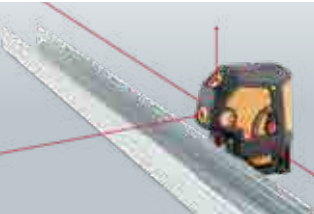




Geo5P 5-Point Laser

Five directions

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



TECHNICAL DATA		FEATURES	SUPPLIED WITH GEO5P
			ART.-NO. 555050
Self-levelling range	± 3.5°	· 5 laser dots (up, down, forward, left, right) · Out-of-level alarm · Multi-functional mount with · strong magnets for optimal use at drywall construction rails · can be fixed to a wall (magnetic or screw hanging) · strap attachment · Transport lock · 1/4" and 5/8" tripod thread	· Multi-functional mount · Magnetic target · 3 x AA Alkaline battery · Padded carrying bag
Accuracy	± 2 mm / 10 m		
Working range	30 m*		
Laser diode / laser class	635 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	20 h		
Temperature range	-10 °C to +50 °C		
Dust / water protection	IP 54		
Weight (instrument only)	0.5 kg		
	* depending on room illumination		

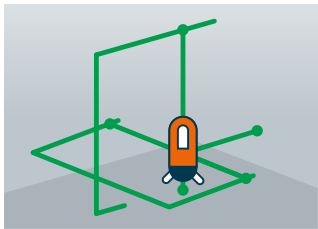
CrossPointer5 GREEN SP

Five points plus cross

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



Selection PRO





TECHNICAL DATA

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

FEATURES

- 2 laser lines form a green laser cross
- 5 laser points: back, left, right, ceiling, floor
- Laser points rotate 360° around vertical axis
- Plumbing function
- Self-levelling function can be switched off for manual use
- Audible & visual alarm when out of level
- Use with receiver FR 75-MM / FR 55 / 55-M (optional)
- Multi-functional mount
 - height adjustable
 - for wall-hanging with screw
 - strap attachment
 - strong magnets on back face
- 1/4" and 5/8" thread for use with tripods etc.

SUPPLIED WITH

ART.-NO. 531550

- Multi-functional mount
- Li-Ion battery
- Intelligent charger
- Magnetic target
- Container



GeoSpider

The tilers best friend!

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

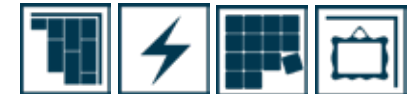


TECHNICAL DATA	GEOSPIDER	FEATURES	SUPPLIED WITH GEOSPIDER
			ART-NO. 552000
Accuracy	± 3 mm / 10 m	· High visibility laser lines achieved by our new innovative design	· 4 x AA Alkaline battery
90° angle accuracy	± 3 mm / 10 m	· Independently height adjustable legs for optimum results over the full working range	· 2 x Magnetic target
Working range	40 m*	· Laser lines switchable separately	· Padded bag
Dust / water protection	IP 52	· Fine motion control for accurate alignment	
Laser class	2	· Fully rotatable laser head with 360° graduation for optimum flexibility	
Operating time	12 h	· Integrated circular bubble for manual levelling on uneven surfaces	
Temperature range	-10°C to +45°C		
	* depending on room illumination		

Square Liner II

At the right angle

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



TECHNICAL DATA	SQUARE LINER II
Accuracy	± 3 mm / 10 m
Working range	max. 30 m*
Laser diodes	2 x 635 nm
Laser class	2
Power supply	2 x 1,5 V AA Alkaline
Operating time	48 h
Temperature range	0°C to +40°C
	* depending on room illumination
FEATURES	SQUARE LINER II
	ART.-NO. 551000
· Fine and clear visible laser lines · 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling · Built-in circular and tubular vials for horizontal and vertical alignment	· Batteries · Magnetic target · Case

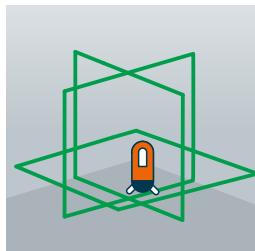


Geo6-XR GREEN

The latest innovation for installing wall and floor coverings

» A comprehensive solution for installation, refurbishment and maintenance

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



Selection PRO

green laser





TECHNICAL DATA

GEO6XR GREEN

Self-levelling range	± 3°
Accuracy	± 2 mm / 10 m
Laser diode / class	green / 2
Working range without receiver	40 m* (radius)
Working range with receiver	60 m** (radius)
Operating time / Power supply	

1 x 360°	15 h / Li-Ion
2 x 360°	7 h / Li-Ion
3 x 360°	5 h / Li-Ion

Dust/waterprotection	IP 54
Temperature range	-10°C to +45°C
Size	115 x 96 x 118 mm
Weight (instrument with battery)	0,8 kg

* depending on room illumination

** depending on direction of laser

FEATURES

- 3 x 360°-Laser lines - form 6 laser crosses
- Laser lines switchable separately
- Plumbing function
- Minimum laser line distance to floor 8 mm
- Minimum laser line distance to wall 6 mm
- Height adjustable platform from 25 to 85 mm
- Wall-mount
 - height and side adjustable
 - can be fixed to a wall
 - Attachment to magnetic surfaces
 - strap attachment
- Visual and audible alarm when out of level
- Self-levelling function can be locked for manual use
- 5/8" thread for use with tripods etc. (bottom / face adaptor)
- 1/4" thread for use with adaptor etc. (top side)
- Use with receiver FR 75-MM / FR 55 / FR 55-M (optional)

SUPPLIED WITH

ART.-NO. 533200

- Li-Ion battery
- Intelligent Charger & USB 3.0 Cable
- Battery case for alkaline batteries
- Height adjustable platform
- Wall-mount
- Support rail
- 20 mm Fixed height adaptor with 5/8"
- 3x Height measurement pins
- Magnetic target
- Container





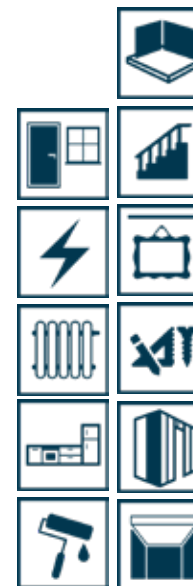
FL 10-Cross

The universal laser for interior work

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

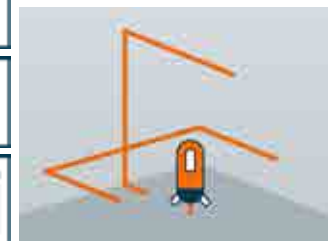


» FL 10-Cross SET



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

FEATURES	SUPPLIED WITH FL 10-CROSS
· A vertical and horizontal line combine to form a laser cross. · Laser lines switchable separately · Visual alarm when out of self-levelling range · 1/4" tripod connection · Multifunctional mount (magnetic and with 1/4" tripod connection)	ART.-NO. 540100 · 3 x AA Alkaline battery · Multifunctional mount · Padded carrying case
	SUPPLIED WITH FL 10-CROSS SET
	ART.-NO. 540110



- 3 x AA Alkaline battery
- Multifunctional mount
- Padded carrying case
- Tripod FS12



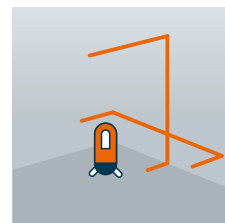
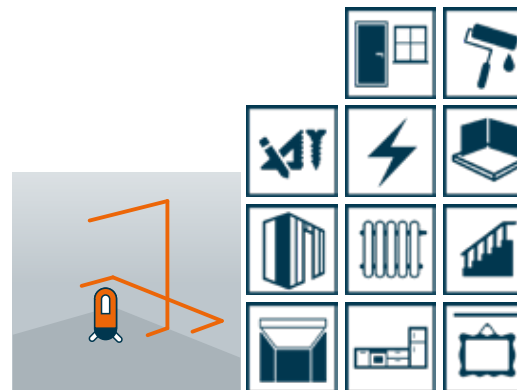
FL 40-PowerCross Plus SP

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

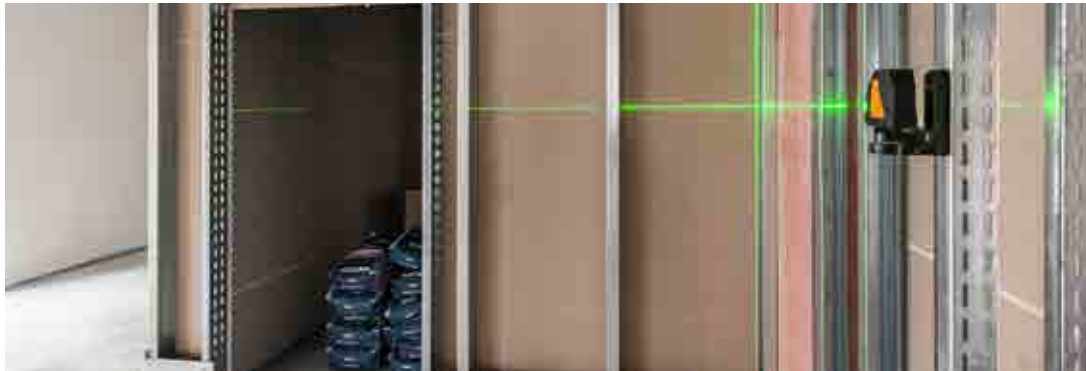
TECHNICAL DATA	FL 40-POWERCROSS PLUS SP	FLG 40-POWERCROSS PLUS GREEN SP	FEATURES
Self-levelling range	± 3°	± 3°	· 1 Laser cross · Laser lines switchable separately · TILT function for manual use · Visual alarm when out of level · Use with receiver FR 75-MM / FR 55 / 55-M (optional) · Multi-functional mount · height adjustable · for wall-hanging with screw · strap attachment · strong magnet on back side · for tripod fixing with 5/8" or 1/4" thread
Accuracy	± 3 mm / 10 m	± 3 mm / 10 m	
Working range without receiver	30 m* (radius)	40 m* (radius)	
Working range with receiver (optional)	80 m	100 m	
Fan angle horizontal	135°	135°	
Fan angle vertical	150°	150°	
Power supply	4 x AA Alkaline	4 x AA Alkaline	
Operating time (all lines switched on)	20 h	9 h	
Dust / water protection	IP 54	IP 54	
Laser diode / class	red / 2	green / 2	
Temperature range	-10 °C to +45 °C	-10 °C to +45 °C	
Weight (instrument with battery)	0,4 kg	0,4 kg	
*depending on room illumination			

FLG 40-PowerCross Plus GREEN SP

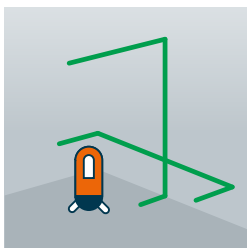
Green is more beautiful

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

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



1 Keypad



 green laser

SUPPLIED WITH
FLG 40-POWERCROSS PLUS GREEN SP

ART.-NO. 541560

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

OPTIONAL

ART.-NO. 541561

- Charger
- Li-Ion batteries

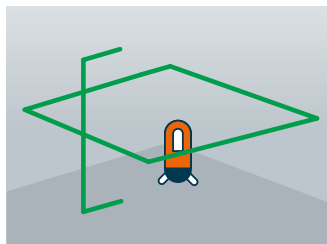
Geo1X-360 GREEN

A self-levelling GREEN line laser with outstanding line visibility

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



 green laser



TECHNICAL DATA	GEO1X-360 GREEN	FEATURES	SUPPLIED WITH
Self-levelling range	± 3°	· 1 Laser cross	ART-NO. 533100
Accuracy	± 3 mm / 10 m	· 1 x 360° horizontal laser line	· Multi-functional mount
Working range w/o receiver	30 m* (radius)	· Laser lines switchable separately	· 4x AA Alkaline battery
Working range with receiver	50 m** (radius)	· TILT function for manual use	· Padded bag
Fan angle Hz Line	360°	· Visual alarm when out of level	
Fan angle V Line	135°	· Use with receiver FR 75-MM / FR 55 / 55-M (optional)	
Power supply	4 x AA Alkaline	· Multi-functional mount	
Operating time (all lines switched on)	10 h	· height adjustable	
Dust / water protection	IP 54	· for wall-hanging with screw	
Laser diode / class	green / 2	· strap attachment	
Temperature range	-10°C to +45°C	· strong magnet on back side	
Weight (instrument with battery)	0.65 kg	· 1/4" and 5/8" thread for use with tripods etc.	
	*depending on room illumination		
	**depending on direction of the laser		





Geo6X SP & Geo6X SP KIT

3 x 360° in red



» **Multi-functional for versatile levelling jobs at indoor construction sites.**

» Simple outfit with alkaline batteries and bag

Selection PRO



Multi-functional mount 1

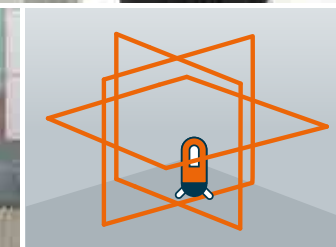
Battery compartment 2

FEATURES GEO6X SP

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

ADDITIONAL WITH GEO6X SP KIT UND GREEN KIT

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



SUPPLIED WITH GEO6X SP

ART-NO. 534000

- 4 x Alkaline batteries
- Magnetic target
- Softbag

SUPPLIED WITH GEO6X SP KIT

ART-NO. 534100

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



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* (radius)	30 m* (radius)	40 m* (radius)
Working range with receiver	60 m (radius)	60 m (radius)	70 m (radius)
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 to +45 °C	-10 °C to +45 °C	-10 °C to +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

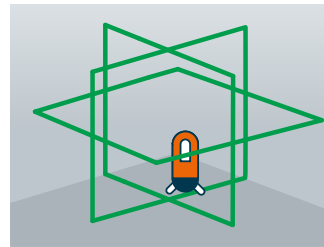
Geo6X SP GREEN KIT

Like red, even better in green

 green laser

» **Multi-functional for versatile levelling jobs at indoor construction sites.**

» Full kit with Li-Ion batteries, charger, wallmount, container, offering the benefits of an innovative tool for the professional user.



SUPPLIED WITH GEO6X SP GREEN KIT

ART-NO. 534500

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



OPTIONAL

ART-NO. 500520

- Receiver FR 55-M
page 72

ART-NO. 500510

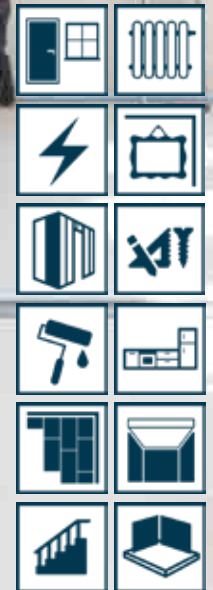
- Receiver FR 55
page 72

ART-NO. 257200

- Receiver FR 75-MM
page 72

ART-NO. 290560

- Walltrack Adapter WS 1
page 124



FLG 64 GREEN HP

Green laser lines for exceptional visibility

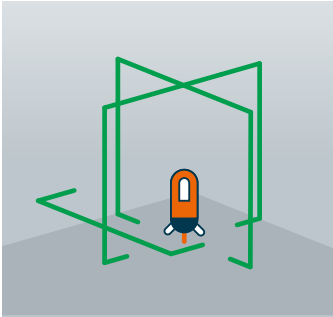
- » High efficiency green beam diodes generate clean precise lines.
- » · 360° circle with slow motion screw for accurate alignment
- Li-Ion batteries and charger
- Pulse-function for use with receiver (optional)



Intuitive control panel 1



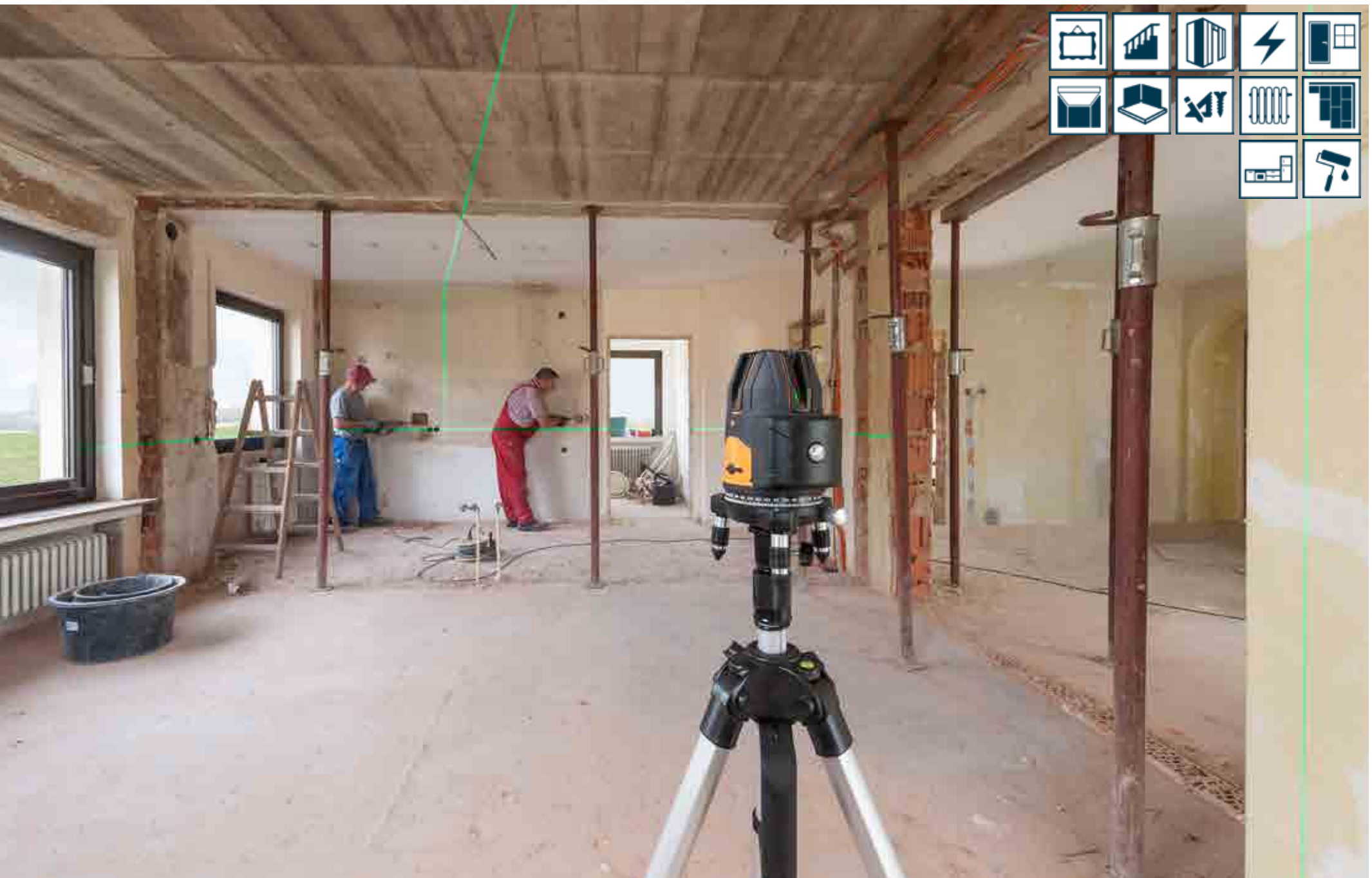
 green laser



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

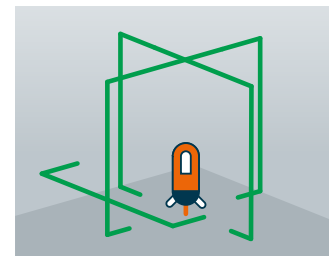
» FLG 66-Xtreme GREEN SP is a Selection PRO product with special features.

» 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
			ART.-NO. 580550
Self-levelling range	± 2°	· 4 vertical lines at 90° to each other	· Li-Ion batteries
Accuracy	± 2 mm / 10 m	· 1 horizontal line 130°	· Charger
Working range without receiver	40 m* (radius)	· Plumb down beam	· Alkaline battery box
Working range with receiver	100 m* (radius)	· Laser lines switchable separately	· Laser intensive glasses
Laser diode / class	- / 2	· Plumbing function	· Magnetic target
Operating time (all lines switched on)	15 h	· Self-levelling function can be locked for manual use (inclined applications)	· Container
Power supply	Li-Ion	· Audible and visible alarm when out of level	
	Alkaline batteries (optional)	· Integrated floor tripod	
Charger can be used as power supply	no	· Slow motion screw for horizontal alignment	
Dust / water protection	IP 65	· Use with receiver (optional)	
Temperature range	0 °C to +40 °C		
Weight (instrument with battery)	1.4 kg		
	* depending on room illumination		

With circular level on top 1

Case with FLG 66-Xtreme
GREEN SP and equipment 2





Selection PRO

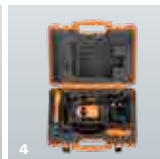
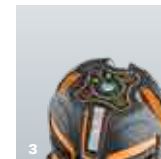
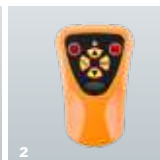
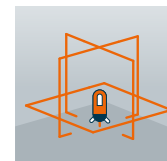
FL 70 Premium-Liner SP Technology at its best

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

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



Selection PRO



Receiver FR 55 for 80 m working range 1

Remote control 2

With circular level on top 3

Case with FL 70 Premium-Liner SP and equipment 4

TECHNICAL DATA		FL 70 PREMIUM-LINER SP	FEATURES	SUPPLIED WITH FL 70 PREMIUM-LINER SP WITHOUT FR 55	SET FL70 PREMIUM-LINER SP + FR 55
Self-levelling range		± 3°	· 5 laser crosses · 4 vertical lines at 90° to each other · 360° horizontal line · Laser cross to the ceiling · Plumb down beam · Self-levelling function can be switched off · Use with receiver FR 55 to extend working range up to 80 m · Remote control for setting slopes · Adjustable 360° circle · Slow motion screw · Audible and visible alarm when out of level · Integrated floor tripod · 5/8" thread for use with standard tripod	ART.-NO. 582010 · Integrated floor tripod · Remote control · Li-Ion batteries and battery charger · Magnetic target · Laser glasses · Adapter for tripod connection · Compartment for alkaline batteries · Container	ART.-NO. 582000
Accuracy		± 1 mm / 10 m			
Working range w/o receiver		30 m*			
Working range with receiver		80 m			
Power supply		Li-Ion			
Operating time		6 - 14 h			
		depending on number of laser lines switched			
Dust / water protection		IP 54			
Laser diode		635 nm			
Laser class		2			
Temperature range		-10°C to +45°C			
		* depending on room illumination			

FL 1000 HP

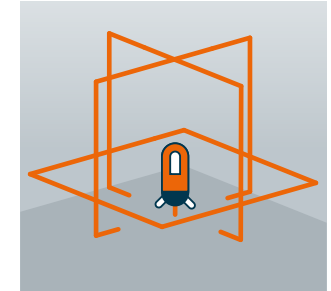
State-of-the-art



» 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



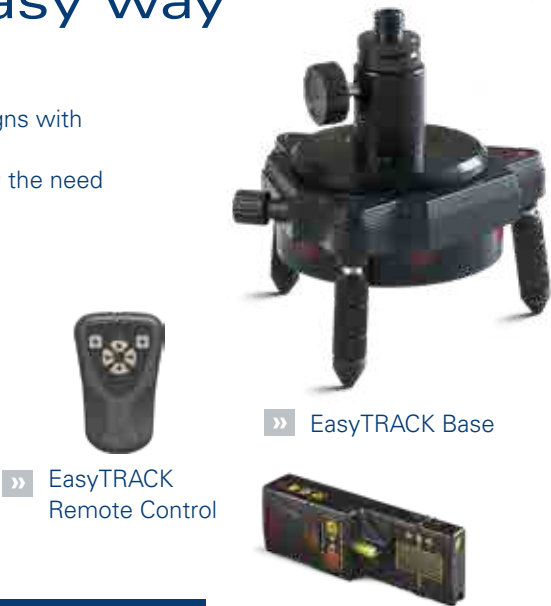
TECHNICAL DATA	FL 1000 HP	FEATURES	SUPPLIED WITH
			ART.-NO. 585020
Self-levelling range	± 5°	· Electronic self-levelling	· Combi-receiver FR 10
Power supply	NiMH / Alkaline	· Horizontal rotating laser beam, visible	· Charger and batteries
Operating time	10 h	· 4 vertical laser lines at 90° to each other	· Magnetic target
Charger = power supply	yes	· Laser cross to the ceiling	· Laser intensive glasses
Laser diode / laser class	635 nm / 2	· Plumb down beam	· Remote control
Temperature range	-10 °C to +40 °C	· TILT function	· Hard case
Weight	2,85 kg	· Slope setting	
Dust / water protection	IP 54	· Combi-receiver for rotating and line beams	
Rotating laser		· Remote control	
Accuracy	± 1 mm / 10 m	· On / off remote control	
Gradual slope setting in X and Y axis	± 5° (± 9%)	· Adjustable 360° circle	
TILT-function	yes	· Slow motion screw	
Working range without receiver Ø	40 m*	· Automatic shut-off / audible alarm when out of level	
Working range with receiver Ø	400 m	· Integrated floor tripod	
Scanning without receiver	30 m*	· 5/8" thread for builders' tripod	
Scanning range	10/30/60°		
Rotating speed rpm	200, 500		
Line laser			
Accuracy	± 2 mm / 10 m		
Working range without receiver	20 m*		
Working range with receiver	60 m		
	* depending on room illumination		

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 Base

» EasyTRACK Remote Control

» 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 to +50°C
Dust / water protection	IP 54

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

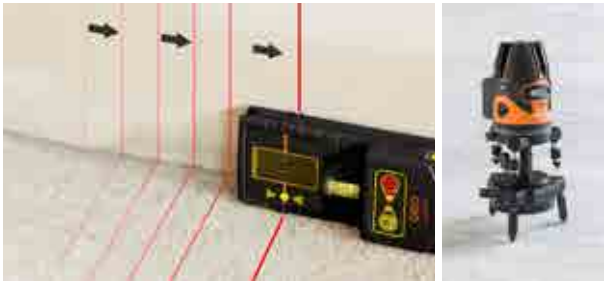
FEATURES

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

SUPPLIED WITH EASYTRACK

ART.-NO. 290900

- EasyTRACK Base
- EasyTRACK Receiver
- EasyTRACK Remote control
- 4 x AA batteries (Base)
- 3 x AA batteries (Receiver)
- 1 x 9V battery (Remote Control)
- Soft bag



FPL P & FPL L Positioning Laser

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



FPL C Positioning Cross Laser



» FPL C-5
FPL C-10
FPL C-20

FEATURES FPL L

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

FEATURES FPL C

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

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

Line and Cross Lasers Outline

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

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

ROTATING LASERS

MORE PRECISELY:

EASY TO USE, ACCURATE,
ROBUST AND RELIABLE.

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





ROTATING LASER FOR INTERIOR CONSTRUCTION

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

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

Areas of application:

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

FLG 190A-GREEN

Outstanding laser line visibility

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

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



 **green laser**

1 Receiver FR 45

2 Receiver FR-DIST 30



TECHNICAL DATA

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



ROTATING
LASER

INTERIOR

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

ART.-NO. 292195

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

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

ART.-NO. 292198

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

FLG 245HV-GREEN

Professionally interior

ROTATING
LASER

INTERIOR


 green laser

» A professional multipurpose laser for indoor applications

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

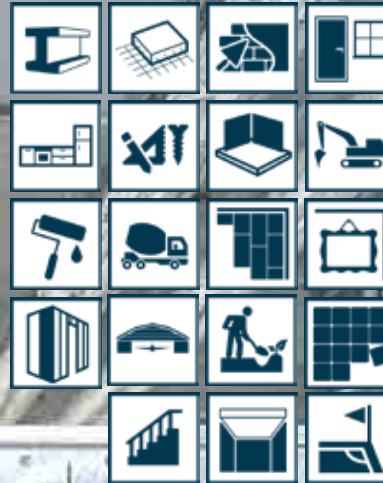
» User-friendly operating concept

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

» Highlights

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

TECHNICAL DATA	FLG 245HV-GREEN	FEATURES
Self-levelling	horizontal/vertical	· Working range up to 1000 m diameter · Dust / water protection IP 54 · Variable scanning and laser point mode · Permanent 90° plumb beam · Automatic TILT alarm function · Auto-shut-off when out of level · Manual slope setting of X and Y axis · Remote control function (on/off)
Grade	manual	
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	green	
Accuracy horizontal	1,0 mm / 10 m	
Accuracy vertical	1,5 mm / 10 m	
Working range with FR 45 Ø	1000 m	
Rotating w/o receiver Ø	40 m	
Scanning w/o receiver / radius	60 m	
Scanning	2 step	
Laserdot mode	yes	
90° plumb beam up	yes	
Slope setting manual X-Axis	±5° (±9%)	
Y-Axis	±5° (±9%)	
Automatic TILT function	yes	
Working range remote control	IR 100 m	
Remote control function (on/off)	yes	
Rotating speed rpm	300, 800	
Operating time	24 h NiMH	
Temperature range	-20° to +50°C	
Dust / water protection	IP 54	



» Container with FLG 245HV-GREEN



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

ART.-NO. 244501

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

FLG 245HV-GREEN (LC 2)
WITHOUT RECEIVER

ART.-NO. 244551

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

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

ART.-NO. 244531

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

ROTATING
LASER

INTERIOR

FLG 245HV-GREEN TRACKING

The indoor alignment pro

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

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

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

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

User-friendly operating concept

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

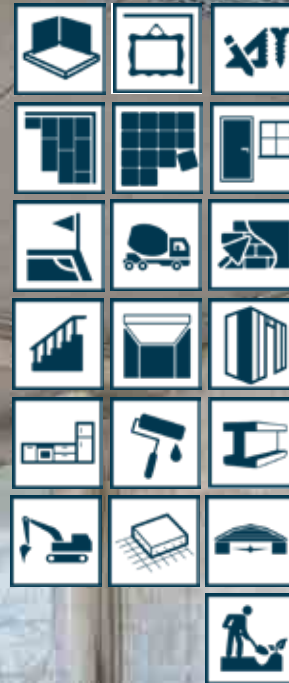
Highlights

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



TECHNICAL DATA	FLG 245HV-GREEN TRACKING	FEATURES
Self-levelling	horizontal/vertical	· Working range up to 1000 m diameter · Dust / water protection IP 54 · Variable scanning and laser point mode · Permanent 90° plumb beam · Automatic TILT alarm function · Auto-shut-off when out of level · Manual slope setting of X and Y axis · Remote control function (on/off) · Floor mount with centring mark for accurate set up · above a ground point
Grade	manual	
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	green	
Accuracy horizontal	1,0 mm / 10 m	
Accuracy vertical	1,5 mm / 10 m	
Working range with FR 77-MM Tracking	1000 m	
Rotating w/o receiver / Ø	40 m	
Scanning w/o receiver / radius	60 m	
Tracking function	yes	
Working range tracking function	60 m	
Scanning	2 step	
Laserdot mode	yes	
90° plumb beam up	yes	
Slope setting manual X-Axis	±5° (±9%)	
Y-Axis	±5° (±9%)	
Automatic TILT function	yes	
Working range remote control	IR 100 m	
Remote control function (on/off)	yes	
Rotating speed rpm	300, 800	
Operating time	24 h NiMH	
Temperature range	-20° to +50°C	
Dust / water protection	IP 54	





ROTATING
LASER

INTERIOR



1



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
- Wall mount
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case

Case with FLG 245HV-GREEN Tracking **1**

Receiver FR 77-MM Tracking **2**

ROTATING LASER FOR INTERIOR AND EXTERIOR CONSTRUCTION

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

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

Areas of application:

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

FL 190A Instantly self-levelling

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



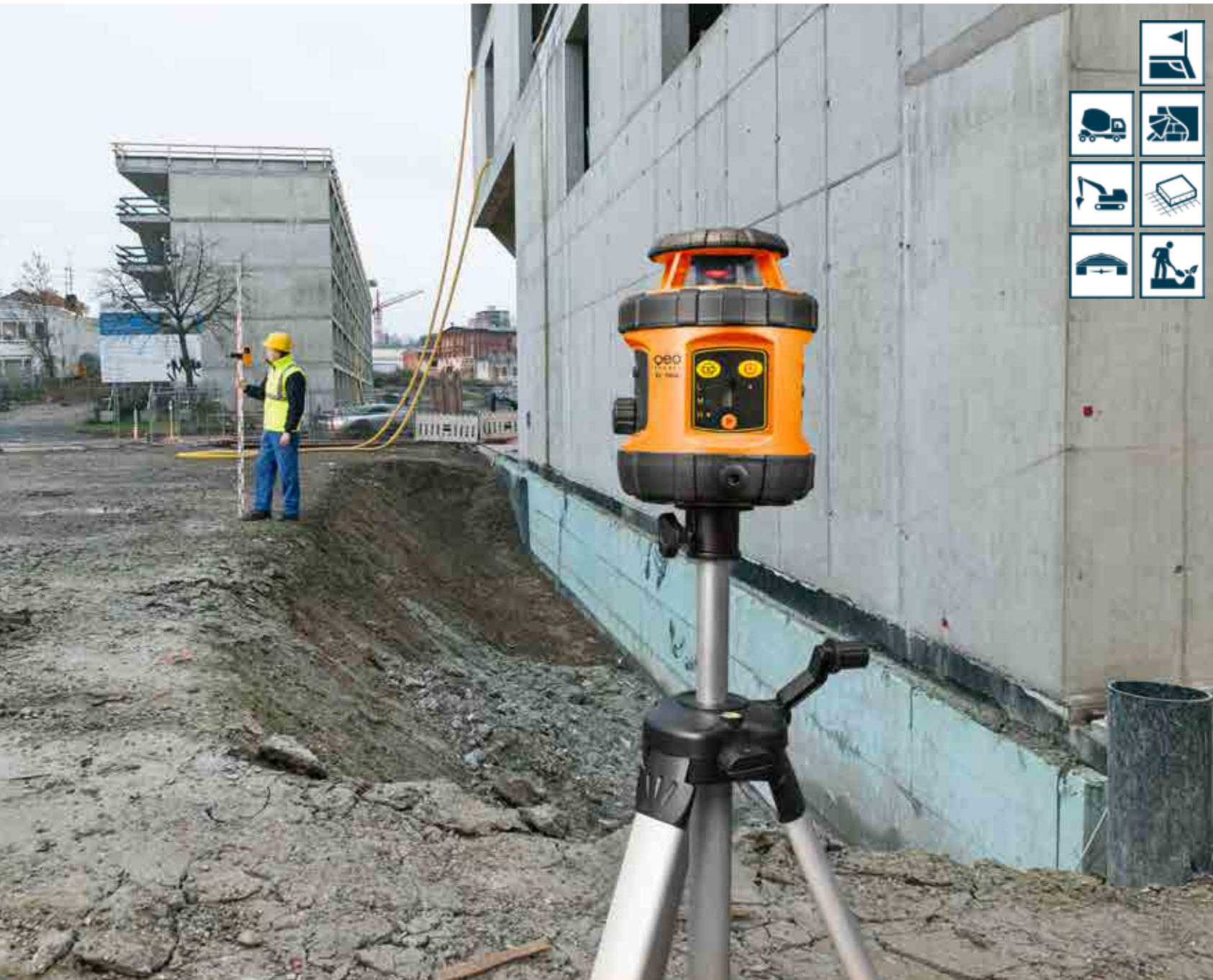
TECHNICAL DATA	FL 190A
Self-levelling range	± 3°
Accuracy	± 1,5 mm / 10 m
Working range without receiver Ø	30 m*
Working range with receiver Ø	400 m
Rotating speed (rpm)	200, 400, 600
Power supply	NiMH
Operating time	12 h
Dust / water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range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

* depending on the room illumination

FEATURES

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





SUPPLIED WITH FL 190A (LC 2)

ART.-NO. 292190

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

SUPPLIED WITH FL 190A (LC 2)

ART.-NO. 292193

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

FL 220HV Straight to the point - no nonsense

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

- » **Just switch on and start.**



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

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

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





ROTATING
LASER

INTERIOR
& EXTERIOR

FL 245HV +

A professional multipurpose laser for indoor and outdoor applications



» The latest development in our 245 Series

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

» User-friendly operating concept

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

» Highlights

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

TECHNICAL DATA	FL 245HV +	FEATURES
Self-levelling	horizontal/vertical	· Working range up to 1200 m diameter (depending on receiver) · Dust / water protection IP 65 · Variable scanning and laser point mode · Permanent 90° plumb beam · Automatic TILT alarm function · Auto-shut-off when out of level · Manual slope setting of X and Y axis · Remote control function (on/off)
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	red	
Accuracy horizontal	0,75 mm / 10 m	
Accuracy vertical	1,0 m / 10 m	
Working range with receiver Ø		
with FR 45	1200 m	
with FR-DIST 30	600 m	
with FR 77-MM	600 m	
without receiver	60 m	
Scanning w/o receiver / radius	60 m	
Scanning mode	2 step	
Laser point mode	yes	
90° plumb beam up	yes	
Slope setting X-Axis manual	±5° (±9%)	
Y-Axis manual	±5° (±9%)	
Axis direction vertical	yes	
Automatic TILT function	yes	
Working range remote control	IR 100 m	
Remote control function (on/off)	yes	
Rotating speed rpm	300, 800	
Battery / Operating time	NiMH / 26 h	
Temperature range	-20° to +50°C	
Dust / water protection	IP 65	





» Container with FLG 245HV-GREEN



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

ART.-NO. 244050

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



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

ART.-NO. 244045

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



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

ART.-NO. 244077

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



ROTATING LASER FOR EXTERIOR CONSTRUCTION

These lasers are specially tailored for outdoor use:

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

Areas of application:

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

FL 105H

Quick and easy to use - now even better

» The latest generation construction laser for horizontal applications

New innovative low friction drive mechanism and self-levelling module

- Accurate, robust and temperature stable
- Low friction drive for reduced noise generation
- Increased battery life



TECHNICAL DATA	FL 105H	FEATURES
Self-levelling	horizontal	Self-levelling horizontal rotating laser · 3 buttons for user-friendly functionality · Working range 600 m diameter · Dust / water protection IP 65 · Automatic TILT alarm function · VWS function (Vibration-Wind-Security) · Auto-shut-off when out of level
Self-levelling range	±5°	
Laser class	2	
Visible laser beam	red	
Accuracy horizontal	1,0 mm / 10 m	
Working range with receiver Ø		
with FR 45	600 m	
with FR 77-MM	300 m	
Automatic TILT function	yes	
VWS function	yes	
Rotating speed rpm	800	
Operating time	36 h NiMH	
Temperature range	-20° to +50°C	
Dust / water protection	IP 65	





SUPPLIED WITH
FL 105H (LC 2) + FR 45

ART.-NO. 212001

- Receiver FR 45 with clamp for levelling staff
- Rechargeable battery and charger
- Battery compartment for alkaline batteries
- Container



SUPPLIED WITH
FL 105H (LC 2) + FR 77-MM

ART.-NO. 212078

- Receiver FR 77-MM with clamp for levelling staff
- Rechargeable battery and charger
- Battery compartment for alkaline batteries
- Container



SUPPLIED WITH
FL 105H (LC 2) + FR-DIST 30

ART.-NO. 212031

- Receiver FR-DIST 30 with clamp for levelling staff
- Rechargeable battery and charger
- Battery compartment for alkaline batteries
- Container

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

ART.-NO. 212001-S02



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

ART.-NO. 212078-S01



ROTATING
LASER

EXTERIOR



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 Ø			· High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$			
· with FR 45		1200 m	· Automatic TILT alarm function			
· with FR 77-MM		900 m	· VWS function (Vibration-Wind-Security)			
· with FMR 706-M/C		900 m	· Auto-shut-off when out of level			
Slope setting manual X-Axis		$\pm 5^\circ (\pm 9\%)$	· Electronic beam screen			
Slope setting manual Y-Axis		$\pm 5^\circ (\pm 9\%)$	· Manual slope setting of X and Y axis			
Automatic TILT function		yes	· Li-Ion battery technology			
VWS function		yes				
Masking (beam screen)		yes				
Working range remote control		IR 100 m				
Rotating speed rpm		800				
Operating time						
Temperature range		$-20^\circ \text{ to } +50^\circ \text{C}$				
Dust / water protection		IP 66				





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

ART.-NO. 211001-S02



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

ART.-NO. 211078-S01



ROTATING
LASER

EXTERIOR

FL 155H-G

Dual grade laser for beginners

ROTATING
LASER

EXTERIOR



- » **The latest innovation in our Dual Grade range**
 - PowerSwitch-Technology: the power of a class 3R laser in a class 2 laser
 - Robust rubberised housing for on-site protection
 - Zonal control (electronic beam screen) eliminates interference from other lasers
- » **High performance**
 - High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
 - Grade setting of X and Y axis up to $\pm 10\%$ (monitored)
 - TILT and VWS-Function
 - Li-Ion battery technology
 - 2-Way RF remote control
- » **Easy operation**
 - Digital setting of grade values
 - Monitored grade
 - Reduced number of buttons for ease-of-use



TECHNICAL DATA	FL 155H-G	FEATURES
Self-levelling range	$\pm 6^\circ$	· Horizontal Dual Grade Laser · Digital grade adjustment · Monitored grade · Automatic TILT function · VWS function combined with TILT function · Illuminated display · Zonal control (masking) · Zonal control (electronic beam screen) · Remote control screen · Li-Ion battery technology · Battery charger includes adapter for in-car charging
Laser class	2	
Accuracy	$\pm 0.5 \text{ mm} / 10 \text{ m}$	
Working range with receiver (Ø)		
with FR 45	1200 m	
with FR 77-MM	600 m	
Horizontal slope setting		
X-Axis	$\pm 10.000\%$	
Y-Axis	$\pm 10.000\%$	
X and Y-Axis	$\Sigma \pm 14 \%$	
Rotating speed	600 rpm	
Operating time	30 h	
Power supply	Li-Ion	
RF Remote control range	80 m	
Temperature range	-20°C to $+50^\circ\text{C}$	
Dust / water protection	IP 65	
Weight (instrument only)	2.2 kg	



ROTATING
LASER

EXTERIOR

SUPPLIED WITH
FL 155H-G + FR 45

ART.-NO. 213145

- Receiver FR 45 with clamp
- 2-Way RF Remote control
- Li-Ion battery
- Intelligent battery charger
- Battery case for alkaline batteries
- Carrying case



SUPPLIED WITH
FL 155H-G + FR 77-MM

ART.-NO. 213177

- Receiver FR 77-MM with clamp
- 2-Way RF Remote control
- Li-Ion battery
- Intelligent battery charger
- Battery case for alkaline batteries
- Carrying case



FL 275HV-TRACKING

The alignment pro

» The latest generation of precise tracking lasers

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

» User-friendly operating concept

- For the ultimate in ease-of-use the only keypad functions on the instrument control power On / Off, VWS, slope selection and the remote control
- All additional functions including scanning and slope setting are accessed from the remote control
- TRACKING function at the receiver

» Improved performance

- Robust remote control with 100 m range

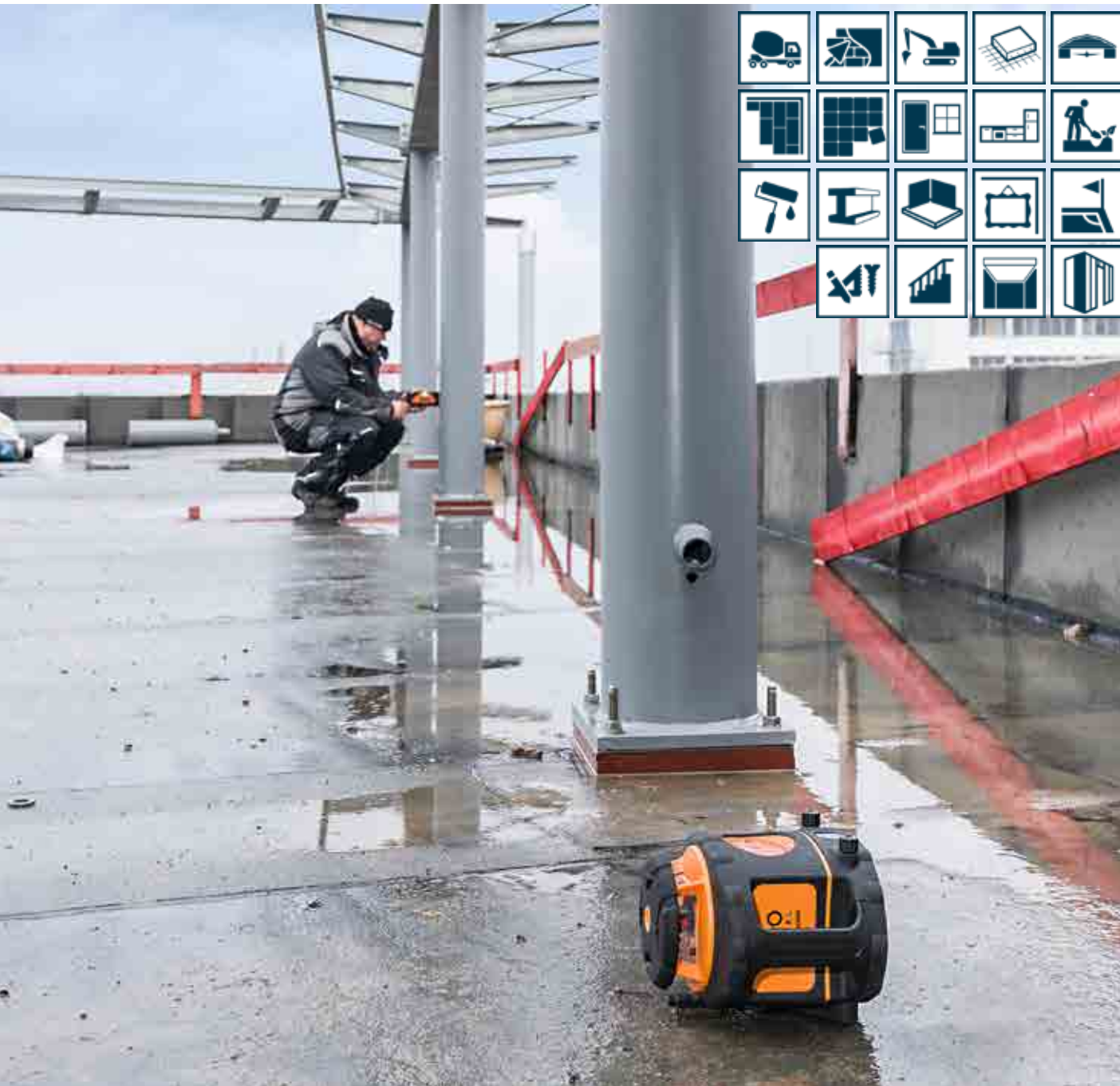


Receiver FR 77-MM TRACKING 1



FEATURES

- TRACKING function for automatic axis alignment horizontal and vertical
- The laser plane is automatically centred to the receiver "on-grade"
- Easy one-button operation of TRACKING function
- Working range of TRACKING function 110 m
- mm-indicating Receiver FR 77-MM TRACKING
- Vertical: in both X and Y axis
- Horizontal: one axis X or Y, opposite axis self-levelled
- Dust / water protection IP 66
- High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
- 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



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
Dust / water protection	IP 66

FL 275HV TRACKING + FR 77-MM TRACKING

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



FL 300HV-G EasyGRADE

The easiest grade laser

ROTATING
LASER

EXTERIOR

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

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

» 2nd axis (Y)

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

» Highlights

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



FEATURES

HORIZONTAL

- Self-levelling
- Numerical grade setting in X-Axis
- Manual grade setting in Y-Axis with remote control

VERTICAL

- Self-levelling
- Axis direction in Y-Axis with remote control
- TILT function
- VWS function (Vibration-Wind-Security)
- 90° beam to zenith
- Dust / water protection IP 66





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

SUPPLIED WITH FL 300HV-G EASYGRADE + FR 45

ART.-NO. 214045

- Receiver FR 45 with clamp
- Remote control
- Rechargeable battery (Li-Ion)
- Intelligent battery charger
- Battery case for alkaline batteries
- Floor mount (integrated)
- Carrying case



SUPPLIED WITH FL 300HV-G EASYGRADE + FR-DIST 30

ART.-NO. 214050

- Receiver FR-DIST 30 with clamp
- Remote control
- Rechargeable battery (Li-Ion)
- Intelligent battery charger
- Battery case for alkaline batteries
- Floor / wall mount (integrated)
- Carrying case



SUPPLIED WITH FL 300HV-G EASYGRADE + FR 77-MM

ART.-NO. 214077

- Receiver FR 77-MM with clamp
- Remote control
- Rechargeable battery (Li-Ion)
- Intelligent battery charger
- Battery case for alkaline batteries
- Floor / wall mount (integrated)
- Carrying case
- Floor/wall mount (integrated)
- Carrying case



FL 505HV-G

The versatile dual grade laser



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

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

With 360° horizontal fine adjustment bracket

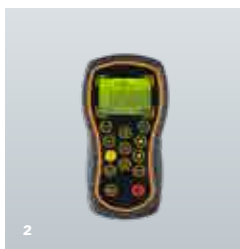
1

With 9-channel 2-way RF remote control

2

Complete kit supplied in container

3



SUPPLIED WITH FL 505HV-G (LC 2) + FR 77-MM

ART.-NO. 231025

- Receiver FR 77-MM with clamp
- 2-Way RF Remote control
- Li-Ion battery & charger
- Vertical mount
- Telescope
- 360° horizontal fine adjustment bracket
- Container

SUPPLIED WITH FL 505HV-G (LC 2) + FR-DIST 30

ART.-NO. 231055

- Receiver FR 77-DIST 30 with clamp
- 2-Way RF Remote control
- Li-Ion battery & charger
- Vertical mount
- Telescope
- 360° horizontal fine adjustment bracket
- Container

FEATURES

- Dual Axis Laser
- Horizontal and vertical
- Digital grade adjustment
- Monitored grade
- TILT function
- VWS function
- 90° beam to zenith
- Illuminated display
- 2 way RF remote control
- Manual function
- 4-step scanning function
- Operation with rechargeable Li-Ion or alkaline batteries
- Dust / water protection IP 66



ROTATING
LASER

EXTERIOR

FL 510HV-G TRACKING M

The ideal outdoor laser

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



INCLUSIVE

- 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 2ND 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 M
			ART.-NO. 231700
Self-levelling range	± 8°	· Dual Axis Laser · Horizontal and vertical · Digital grade adjustment · Monitored grade (also in tracking mode) · TILT function · VWS function · Tracking function horizontal and vertical · Zonal control · 90° beam to zenith · Illuminated display · 2-way RF remote control · Manual function · Operation with rechargeable Li-Ion or alkaline batteries · Dust / water protection IP 66	· Receiver FR 77-MM TRACKING with clamps for levelling staff and scaffold · Rechargeable batteries and charger · 2-way RF remote control · Li-Ion batteries and charger · Vertical mount · Telescopic viewfinder · Container
Accuracy horizontal	± 0.5 mm / 10 m		
Accuracy vertical	± 1 mm / 10 m		
Working range with receiver FR 77-MM TRACKING Ø	400 m*		
Laser diode / Laser class	2		
Horizontal slope setting			
X-axis	± 10.000 %		
Y-axis	± 10.000 %		
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 avoids spurious measurements caused by crossing laser planes and reflections - increases site safety
- indication of grade value in % after completion of tracking process shown on the instrument and remote control display.

» Slope functions:

· Horizontal:

- Digital grade setting of X and Y axis up to $\pm 10\%$
- 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

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

EXTERIOR							
horizontal			horizontal / vertical				
FL 105H	FL 115H	FL 155H-G	FL 275HV-TRACKING	FL 300HV-G EASYGRADE	FL 505HV-G	FL 510HV-G TRACKING	ART.-NO.
212001	211001	213145	242701	214045	231025	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	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 65	IP 66	IP 65	IP 66	IP 65	IP 66	IP 66	Dust / water protection
40 m	60 m	-	40 m	-	40 m	40 m	Working range w/o receiver Ø
600 m	1200 m	1200 m	-	1200 m	-	40 m	Working range with receiver FR 45 Ø
300 m	900 m	600 m	400 m	600 m	400 m	400 m	Working range with receiver FR 77-MM Ø
800	800	500, 800	300, 800	800	300,600,1100	300,600,1100	rpm
-	-	-	yes	-	-	yes	Tracking function
yes	yes	yes	yes	yes	yes	yes	TILT function
-	yes	yes	yes	yes	yes	yes	VWS function
-	± 5° (9 %)	± 6° (10 %)	± 5° (9 %)	+ 6.9 % (X)	± 10 %	± 10 %	Slope function of both axis X and Y
-	manual	digital / controlled	manual	numeric / controlled	digital / controlled	digital / controlled	Slope setting
-	-	-	yes	yes	yes	yes	Plumb up / down beam
NiMH	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Power supply
inclusive, without remote	inclusive	inclusive	inclusive	inclusive	inclusive	inclusive	Receiver, remote control, rechargeable battery, charger
48	50	52	54	56	58	60	Page

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

- FR-FKL Receiver
- Batteries

TECHNICAL DATA	FKL 44 (LC 2)	FEATURES	SUPPLIED WITH FKL 44 (LC 2)
		· Robust aluminium housing · Easy intuitive operation · Fully automatic self-levelling · Automatic beam centering · Laser start point indication · Clear easy-to-read OLED-Display · RF Remote control with long working range	ART.-NO. 454000
Laser class	2		· Target frame with targets DN 100 / 125 / 150 / 200 / 250 / 300 · Special target for DN 100 pipes (also target frame for FR-FKL TRACKING) · RF-Remote control · Leg sets DN 125 / 150 / 200 / 250 / 300 · Li-Ion battery and charger
Laser diode	red		
Beam diameter	10 mm		
Working range	120 m		
Grade range	-20% to +30%		
Self-levelling range	± 5°		
Minimum display reading	0,000 %		
Horizontal accuracy	± 5 mm / 100 m		
Left / right tracking	± 10°		
Operating time	24 h		
Power supply	8000 mAh Li-Ion		
RF-Remote control range			
front / back	100 m / 50 m		
Temperature range	-20°C to +50°C		
Dust / water protection	IP 68		
Dimensions	Ø 96 mm, L = 332 mm		
Weight (laser only)	2,8 kg		
TECHNICAL DATA	RECEIVER FR-FKL TRACKING	WITH FR-FKL TRACKING	
Accuracy	± 2 mm / 100 m	· Tracking function for automatic detection of the horizontal target plate center.	
Working range	50 m		
Power supply	2 x AAA batteries		
Temperature range	-10°C to +45°C		
Dust / water protection	IP 67		



» SUPPLIED WITH

Fitting

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

Optional: Receiver FR-FKL Tracking 1

Special target for DN 100 2

Target plate DN 300 with receiver 3

RF remote control with digital display 4



» FKL 55



» FKL 55-Green



 green laser

FKL-55 and FKL-55 GREEN Straight and advanced

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

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

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

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

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



SUPPLIED WITH

Fittings

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

Application in pipes DN 150 w/o legs

FEATURES

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



Universal Mount for FKL-55 / FKL-55 Green



UNIVERSAL MOUNT

ART.-NO. 455100

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

RECEIVERS

OVERCOME DISTANCES:
WITHOUT LOSING THE DETAIL.

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





FR 55-M & FR 55 Receiver for Line Lasers

» For red and green laser.

» Height indication by LEDs.

» Height indication by LEDs and LCD.



FEATURES

FR 55-M

ART.-NO. 500520

- 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

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	$\pm 10 \text{ mm}, \pm 4 \text{ mm}, \pm 2 \text{ mm}$	· 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	



FR 77-MM

Receiver for Rotating Lasers

» For red and green laser.

With digital level indication in millimeters.

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

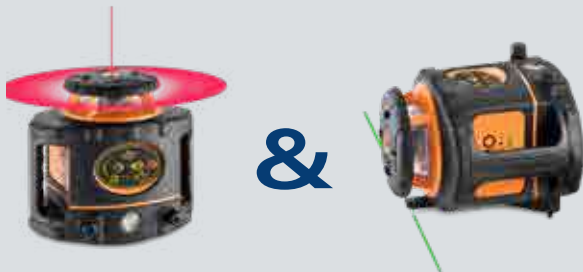


Illuminated display 1



Detail offset 2

UNIVERSAL ACCESSORIES FOR RED AND GREEN ROTATING LASERS



TECHNICAL DATA		FR 77-MM	FEATURES	SUPPLIED WITH FR 77-MM
			· For rotating lasers using a red and green laser beam · Extra-long receiving window · mm-indication of difference between laserplane and "0" level · Segments of display indication increase / decrease proportionally · "0"-position can be defined (offset) · Display illumination · Robust clamp · Special mount for various connections e.g. at the scaffold	ART.-NO. 257100
3-step accuracy		± 2 / 5 / 9 mm		· 4 x AA Alkaline · Clamp · Bracket
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				
				SUPPLIED WITH FR 77-MM TRACKING
				ART.-NO. 257150
				· 4 x AA Alkaline · Clamp · Bracket

FR-DIST 30

Receiver for Rotating Laser with integrated Laser Distance Meter

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

Applications

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



mm indication **1**

Measurement of area **2**



TECHNICAL DATA

FR-DIST 30

LASER RECEIVER

Accuracy	± 1 / 5 / 9 mm
Working range	300 m (radius)
Temperature range	-10°C to +50°C

LASER DISTANCE METER

Accuracy	± 2 mm
Measuring range	50 m
Temperature range	0°C to +40°C
Point of reference	Bottom, on-Level, top
Measuring units	m / ft / inch
Laser class	2

GENERAL

Length of receiving window	100 mm
Signal tones	yes
Display indication	front
LED indication	front / side
Power supply / operating time	3 x AA Alkaline
Operating time	
used as laser receiver only	30 h
used as laser distance meter only	5000 measurements
Combined	8 h
Display illumination	yes
Magnets & Vials	top, side
Dust / water protection	IP 65
Dimensions	172 x 80 x 32 mm
Weight	0,3 kg

FEATURES

- Can be used with either red or green beam rotating lasers
- mm-indication of difference between laserplane and "0" level
- Extensive laser distance meter functions

- Measuring functions (LASER DISTANCE METER)
- Single / permanent measurement
 - Area / volume
 - Pythagoras 1, height (2 points)
 - Pythagoras 2, overall height (3 points)

SUPPLIED WITH FR-DIST 30

ART.-NO. 257300

- 3 x AA Alkaline battery
- Clamp for levelling staff

FMR 600 Receiver for Rotating Lasers



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



TECHNICAL DATA	FMR 600	SUPPLIED WITH FMR 600	FEATURES
		ART.-NO. 265000	
Accuracy fine	± 5mm	· Batteries	· Attachment to levelling staff by use of clamp or directly to the machine with built-in magnets
Accuracy coarse	± 12,5mm	· Container	· LCD, LEDs and 3 different tones indicate heights
Working range	200 m	· Clamp for levelling staff	· Memory function of last received data
Receiving window	125 mm long		· Water / dust resistant
Reception angle	240°		
Power supply	4 x AA Alkaline		
Operating time	50 h		
Temperature range	-20°C to +50°C		
Dimensions	170 x 100 x 42mm		
Dust / water protection	IP 66		
Weight	0,96 kg		

Set FMR 700-M/C Machine Control Receiver Set

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



» Clamp



» Magnet



» FRP 707

TECHNICAL DATA	FMR 700-M/C UND 706-M/C	FEATURES	SUPPLIED WITH FMR 700-M/C UND 706-M/C
Accuracy fine	± 2 mm – ± 10 mm	· Length of receiving window: 25 cm	Machine control receiver, built-in rechargeable battery, charger, 12 / 24V-battery cable, remote display with connection cable, hard case
Accuracy coarse	± 5 mm – ± 23 mm	· Connect to the machine with screw clamps or with strong ma- gnets (both supplied in the kit)	Also supplied separately:
Rechargeable batteries	7,2 V NiMH 2500 mAh	· Detects beam from rotating laser levels of any brand	· Machine control receiver FMR 706- M / C, built-in battery, charger, 12 / 24V battery cable, hard case
Operating time	40 h	· Remote display	· Remote display with connection cable
Charging time	15 h		
Temperature range	-20°C to +50°C		
Dimensions	376 x 180 x 49mm		
Weight	3,1 kg		

FMR 706-M/C
(MAGNET AND CLAMP)

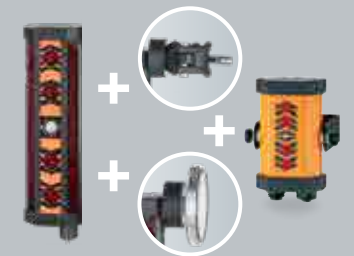
ART.-NO. 260550

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



TECHNICAL DATA		FMR 800-M/C	MACHINE CONNECTION	FEATURES
Beam reception angle		360°	· Magnetic connection directly to the machine · Clamp connection to the machine mast · Mast diameter 40–50 mm	· Length of receiving window: 27 cm · Will detect the beam from any brand of rotating laser (red) · Dust / water protected metal housing · Wireless remote display with suction pad and integrated magnets
Detectable rotating laser speeds rpm		300 - 1200		
Working range class 2-laser		250 m		
Working range class 3R-laser		350 m		
Battery recharging time		4 - 5 h		
Automatic power-off, after		60 min.		
Dust / water protection		IP 66		
Operating temperature		-10 °C to +50 °C		
Dimensions		370 x 132 x 92 mm		
Weight (receiver only)		3.95 kg		

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

SUPPLIED WITH FMR 800-M/C		SUPPLIED WITH FMR 800-M/C SET	
ART.-NO. 264500		ART.-NO. 264550	
· Machine receiver FMR 800-M / C with built-in rechargeable battery · Charger · Hard carrying case		· SET Machine receiver FMR 800-M / C with built-in rechargeable battery · Charger · Remote display FRD 807 with suction pad and batteries · Hard carrying case	



Clamp 1



FRD 807 Remote Display

1 Suction pad attachment



TECHNICAL DATA	FRD 807
Wireless (RF) communication range	10 m
Communication channels	3
Machine connection:	· integrated magnetic pads · strong suction pad for cabin windscreen
Power supply	4 x AA alkaline
Dimensions	170 x 100 x 42 mm
Weight	1.1 kg

SUPPLIED WITH REMOTE DISPLAY FRD 807
ART.-NO. 264540
· Remote display FRD 807 · Suction pad · Batteries

Magnetic Support for Machine Control Receiver

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



MAGNETIC SUPPORT
FOR MACHINE CONTROL RECEIVER

ART.-NO. 290810

SURVEYING INSTRUMENTS

AT OUR CORE:
PRECISION AND INNOVATION.

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



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



N 32-Set Automatic Level



TECHNICAL DATA

N 32

ART.-NO. 400 GON
ART.-NO. 360°

200532
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

- Robust metal housing
- Supplied in carton comprising N32, 5 m levelling staff and tripod for convenient storage and delivery

SUPPLIED WITH N 32-SET (400 GON & 360°)

- N 32 level with carrying case
- Aluminium tripod
- 5 m levelling staff
- Carrying case

GFN 1 Automatic Level suitable for all construction sites

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



TECHNICAL DATA

GFN 1

Mean error for 1 km double levelling	± 1,5 mm
Telescope magnification	32 x
Objective diameter	36 mm
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

- Robust metal housing with handle for comfortable handling
- Bubble reading mirror
- Optical sight for quick alignment to a levelling staff

SUPPLIED WITH GFN 1

ART.-NO. 400 GON 200200
ART.-NO. 360° 200205

- Adjustment pin
- Carrying case

SUPPLIED WITH GFN 1 SET

ART.-NO. 400 GON 200201
ART.-NO. 360° 200206

- GFN 1 Level with carrying case
- Aluminium tripod
- 5 m levelling staff
- Set carton



GFN 10

High-class Engineers' Level

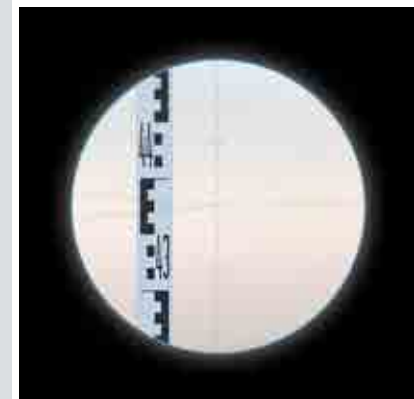
- » 32 x magnification and bright optics
- Robust all-metal housing
- Wedge-shaped reticle
- Internal circle and compensator test button
- Handle for comfortable handling



- 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	- Robust metal housing with handle for comfortable handling - Reticle in wedge-shape for most accurate reading - Well protected internal circle - Compensator test button - Bubble reading mirror	ART.-NO. 400 GON 200220
Telescope magnification	32 x		ART.-NO. 360° 200225
Objective diameter	40 mm		
Shortest focussing distance	0,6 m		
Working range of compensator	± 15'		
Levelling accuracy	± 0,3"		
Circular bubble	8' / 2 mm		
Horizontal circle	400 gon / 360°		
Dust / water protection	IP 65		
Weight (instrument only)	1,6 kg		

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
Magnification	20 x
Objective aperture	30 mm
Shortest focusing distance	1.2 m
Direct reading	0.1 gon
Estimation	10 mgon
Temperature range	-40 °C to +50 °C
Weight	2.0 kg

FEATURES
· Built-in optical plummet · Circular bubble, plate level · Telescope vial · Circle orientation device · Available in 400 gon or 360°

FET 220 Electronic Theodolite – easy to use

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

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



SUPPLIED WITH FET 220

ART.-NO. 313000

- Tribrach
- Rechargeable battery
- Charger
- Battery compartment for alkaline batteries
- Container

TECHNICAL DATA	FEN 132
Magnification	30 x
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

FEATURES
· Large easy-to-read LCD · Laser plummet for easy set up over the ground point · Illumination of LCD and field of view · Horizontal circle: Hold-Function, 0-set at any desired position, clockwise/anti-clockwise reading · Vertical circle: reading in gon / degrees / percent

FGS Lite

Now surveying can be easy and affordable!

- » **The new geo-FENNEL GNSS-Antenna FGS Lite with geo-FENNEL Survey Software supports the user in a variety of simple surveying tasks.**
- » Whether field survey or stakeout, the data can be quickly and accurately transmitted or read from Android controllers and mobile devices such as standard tablets or mobile phones.
- » **The geo-FENNEL Survey Software is a simplified, android-based application software that can handle simple measurement tasks. Stake out points and lines, area calculation and the calculation of point coordinates.**

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

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

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

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



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

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

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

SUPPLIED WITH FGS LITE-SET OHNE FELDRCHNER

ART.-NO. 740100

- FGS Lite GNSS Receiver
- GAT 300 GNSS Antenna
- Rechargeable battery for FGS Lite
- Charging cable for FGS Lite
- Bracket for FGS Lite
- Antenna connection cable for FGS Lite
- Handy hard case
- Survey Software



SUPPLIED WITH FGS LITE-SET MIT FELDRCHNER

ART.-NO. 740110

- FGS Lite GNSS Receiver
- GAT 300 GNSS Antenna
- Rechargeable battery for FGS Lite
- Charging cable for FGS Lite
- Bracket for FGS Lite
- Antenna connection cable for FGS Lite
- Handy hard case
- Survey Software
- Field Controller FAC 1
- Bracket for FAC 1



MEASURING INSTRUMENTS

WITH AN EYE TO THE FUTURE:
PRECISION MEETS INNOVATION.

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





EasyWheel M20 Measuring Wheel

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



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

TECHNICAL DATA	FEATURES
ART-NO. 120	
Accuracy ± 0,1 %	· Ergonomic handle with non-slip pistol grip
Measuring distance 0 - 9.999,9 m	· Brake and «0» reset integrated into the handle for ease of use
Wheel circumference 1 Meter	· Smallest unit of measurement 10 cm
Extended size 1000 (L) x 140 mm (B)	· Counter adds when moving forward and subtracts in reverse
Folded size 510 (L) x 140 mm (B)	· Movable pointer to ensure accuracy of starting point and finishing position
Weight 1,8 kg	· Large folding stand for stability
	· Coated wheel for excellent traction over a variety of surfaces
SUPPLIED WITH M20	
· Measuring Wheel	
· Carrying case with shoulder strap	

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

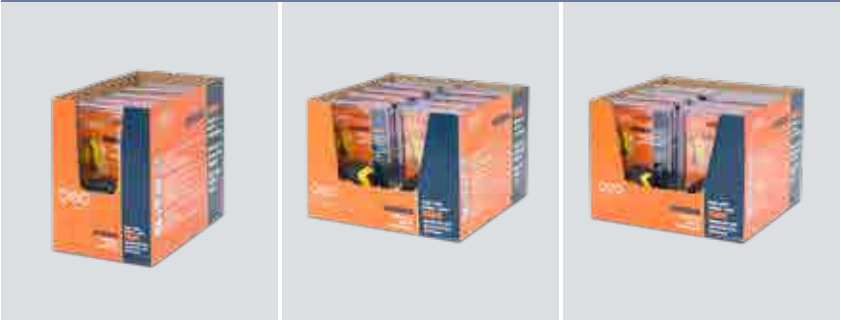


Rubber Tape

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



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	



GeoTape 2in1

Laser Distancemeter with built-in 5m tape

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

FEATURES

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

TECHNICAL DATA

ART.-NO. 300710

Laser measuring range	up to 20m
Accuracy	± 2 mm
Resolution	1 mm
Tape length	5m
Tape accuracy	± 1,5 mm @ 5m
Blade width	19 mm
Auto switch-off Laser/Display	30 / 180 seconds
Laserclass / Wavelength	2 / 630-670 nm
Working temperature	0 to 40°C
Power supply / working time	Li-Ion / 5 h
Battery charging	via USB connection
Dimensions	83 x 79 x 54 mm
Weight (with batteries)	275g

SUPPLIED WITH

- USB charging cable
- Built-in Li-Ion battery



GeoDist® 50

Laser Distance Meter

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



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

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

MEASURING
INSTRUMENTS

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
· Holster · Batteries
Range and accuracy test according to DIN ISO 16331-1

TECHNICAL DATA	DISTO D1
Accuracy	± 2,0 mm
Measuring distance	0,2 – 40 m
Laser class	2
Dust / water protection	IP 54
Dimensions	115 x 43,5 x 23,5 mm
Weight	87 g
FEATURES	
· Distance measurement · Permanent measurement · Bluetooth® Smart · Leica Disto™ sketch app · Illumination of display · mm, ft, inch · Acoustic signal confirming the measurement	



DISTO D110

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

TECHNICAL DATA	DISTO D110	FEATURES	SUPPLIED WITH DISTO D110
			ART-NO. 300010
Accuracy	± 1.5 mm	· Permanent measurement area · Bluetooth® Smart · Leica Disto™ sketch app · Illumination of display · mm, ft, inch · Acoustic signal confirming the measurement	· Holster · Batteries
Measuring distance	0.2 – 60 m		
Laser class	2		
Dust / water protection	IP 54		
Dimensions	120 x 37 x 23 mm		
Weight (with batteries)	92 g		Range and accuracy test according to DIN ISO 16331-1

DISTO D2

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



TECHNICAL DATA		DISTO D2	SUPPLIED WITH DISTO D2
			ART.-NO. 300002
Accuracy	± 1,5 mm		· Holster · Batteries Range and accuracy test according to DIN ISO 16331-1
Distance	100 m		
Laser class	2		
Dust / water protection	IP 54		
Weight (with batteries)	100 g		
FEATURES			
· 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

ART.-NO. 300300

- Holster
- Batteries

Range and accuracy test according to DIN ISO 16331-1



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

FEATURES

- X-Range Power Technology
- Tilt sensor
- DISTO™ transfer for Windows
- DISTO™ Plan app for iOS and Android
- Smart Room function support
- General data interface: Bluetooth® Smart
- Data interface for 3D point data: Bluetooth® Smart
- Multifunctional endpiece with automatic reference detection
- 2 m drop tested

DISTO X4

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

SUPPLIED WITH DISTO X4

ART.-NO. 300400

- Holster
- Batteries

Range and accuracy test according to DIN ISO 16331-1

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

FEATURES

- X-Range Power Technology
- Tilt sensor
- Memory of last 20 measurements
- DISTO™ transfer for Windows
- DISTO™ Plan app for iOS and Android
- Smart Room function support
- Multifunctional endpiece with automatic reference detection
- General data interface: Bluetooth® Smart
- Data interface for 3D point data: Bluetooth® Smart
- 2 m drop tested



DISTO X4 SET + DST 360

» Point to Point Measuring (P2P)

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

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



» Disto X4 with DST 360



» Complete Disto X4 Set

SUPPLIED WITH DISTO X4 SET + DST 360

ART.-NO. 300436

- Disto X4
- DST 360
- Tripod
- Robuster case (IP 67)
- Holster
- Batteries

Range and accuracy test according to DIN ISO 16331-1

DISTO D510



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

TECHNICAL DATA	DISTO D510	FEATURES	SUPPLIED WITH
			ART-NO. 300007
Distance	0.05 – 200 m	· Minimum / maximum	· Holster
Accuracy	± 1.0 mm	· Permanent measurement	· Hand loop
Dust / water protection	IP 65	· Plus / minus	· Batteries
Weight	198 g	· Area / volume	
Laser class	2	· Room function summary	
		· Indirect height measurement (Pythagoras)	Range and accuracy test according to DIN ISO 16331-1
		· Measurement despite obstructions	
		· Measurement of facade areas	
		· 360° TILT sensor	
		· Bluetooth® smart	

DISTO D810 touch



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

TECHNICAL DATA	DISTO D810	SUPPLIED WITH
		ART-NO. 300009
Distance	0.05 – 200 m	· Holster
Accuracy	± 1.0 mm	· Hand loop
Dust / water protection	IP 54	· Batteries
Weight	238 g	
Laser class	2	Range and accuracy test according to DIN ISO 16331-1
FEATURES		
· Minimum / maximum · Permanent measurement · Plus / minus · Area / volume · Room function summary · Indirect height measurement (Pythagoras)		
· Measurements despite obstructions · Measurement of facade areas · Bluetooth® · 360° TILT sensor for measurement of any slope (even overhead)		
		EXTERIOR PACKAGE
		ART-NO. 300013

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

ART-NO. 300013



» DISTO D810 touch

DISTO S910

Measure anything from anywhere with P2P technology

3D Measurement

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

Point to Point Measurements

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

Data Capture in CAD Format

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

Measure and document

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

Real-Time Transfer of Point Data

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

Smart Area Measurement

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

Outdoor Measurement

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



FEATURES

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

TECHNICAL DATA	DISTO S910	SUPPLIED WITH DISTO S910	SUPPLIED WITH DISTO S910 P2P-PACKAGE
		ART.-NO. 300913	ART.-NO. 300912
Distance	0,05 - 300 m	· Holster	· Holster
Accuracy	± 1.0 mm	· Handloop	· Handloop
Dust / water protection	IP 54	· Smart base extension	· Smart base extension
Weight	290 g	· Charger	· Charger
Laser class	2		· GZM3 Target plate
			· FTA360-S Tripod adapter
			· Tripod TRI 120
			· Hard case

Electronic Slope Measurers

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

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

S-Digit mini +

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



TECHNICAL DATA	S-DIGIT MINI +	FEATURES	SUPPLIED WITH
			ART.-NO. 610010
Working range	4 x 90°	· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°	· Padded bag
Resolution	0.1° / 0.1%	· Inclination direction indication	· Batteries
Accuracy	± 0.1°	· Zero position re-set at any position	
Measuring units	°, %, mm/m, in/ft	· Automatic digit inversion for overhead measurements	
Power supply	3 x AA Alkaline	· HOLD function to freeze measurement	
Operating time	600 h	· Illuminated display	
Temperature range	-10°C to +45°C	· Magnetic housing	
Weight (incl. batteries)	0.37 kg	· 1/4" thread for camera tripod	
Size	164 x 60 x 32 mm		

S-Digit multi +

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



1 Easy reading even from above and integrated laser beam

TECHNICAL DATA	S-DIGIT MULTI +	FEATURES	SUPPLIED WITH
			ART.-NO. 630010
Working range	4 x 90°	· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°	· Padded bag
Resolution	0.1° / 0.1%	· Inclination direction indication	· Batteries
Accuracy	± 0.1°	· Zero position re-set at any position	
Measuring units	°, %, mm/m, in/ft	· Automatic digit inversion for overhead measurements	
Working range laser	20 m	· 180° rotatable display	
Accuracy laser	± 0.5 mm / 1 m	· Visible laser beam to extend working range	
Wave length / laser class	650 nm / 2	· HOLD function to freeze measurement	
Power supply	3 x AA Alkaline	· Illuminated display	
Operating time	w/o laser 50 h with laser 20 h	· Magnetic housing	
Temperature range	-10 °C to +45 °C	· 1/4" thread for camera tripod	
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.

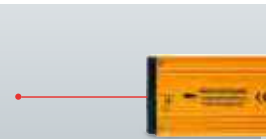


- 1 Clearly visible display – standard or “overhead”
- 2 With laser beam to extend working range

TECHNICAL DATA	S-DIGIT 60 +	FEATURES
Working range	4 x 90°	· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · Visible laser beam to extend working range · HOLD function to freeze measurement · Illuminated display · 1/4" thread for camera tripod
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 to +45 °C	SUPPLIED WITH S-DIGIT 60 +
Weight (incl. batteries)	0.86 kg	
Size	600 x 60 x 32 mm	ART.-NO. 620010 · Padded bag · Batteries



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 to +45 °C	-10 °C to +45 °C
Weight	0.93 kg	1.2 kg
Dimensions	600 x 60 x 27 mm	120 x 60 x 27 mm
SUPPLIED WITH S-DIGIT 60WL + / 120WL +		FEATURES
· Padded bag · Batteries		· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · 180° rotatable display · HOLD function to freeze measurement · Illuminated display · 1 or 2 recessed hand grips for ergonomic use

A-Digit 50 and 75

» Robust electronic angle measurer made of anodized aluminium.



FEATURES

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

TECHNICAL DATA

A-DIGIT 50 ET 75

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

A-DIGIT 50

ART.-NO. 650050

- Padded bag
- Batteries

A-DIGIT 75

ART.-NO. 650075

- Padded bag
- Batteries



Multi-Digit Pro + All-in-one

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



TECHNICAL DATA

MULTI-DIGIT PRO +

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

SUPPLIED WITH MULTI-DIGIT PRO +

ART.-NO. 600010

- Padded bag
- Batteries

FEATURES

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





Scale Master Pro XE

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

SUPPLIED WITH SCALE MASTER PRO XE

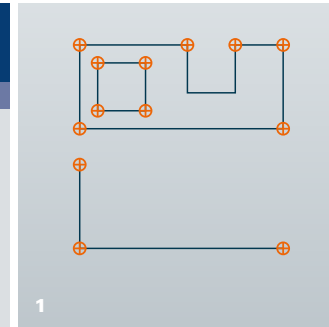
ART.-NO. 6135

- Scale Master Pro XE
- Case
- Batteries
- Manual

OPTIONAL USB-CABLE

ART.-NO. 5001B

- USB cable for data transfer to PC



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

Spirit Level M-Level ALU magnetic

Extremely robust for professionals

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



Spirit Level M-Level TPZ

Aluminium die-cast spirit level

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



FEATURES

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

M-LEVEL ALU ART.-NO.

M-Level 40 ALU	40 cm	660100
M-Level 60 ALU	60 cm	660105
M-Level 100 ALU	100 cm	660115
M-Level 120 ALU	120 cm	660120
M-Level 150 ALU	150 cm	660125

M-LEVEL ALU MAGNETIC ART.-NO.

M-Level 40 MALU	40 cm	660135
M-Level 60 MALU	60 cm	660140
M-Level 100 MALU	100 cm	660145



TECHNICAL DATA

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



M-LEVEL TPZ ART.-NO.

M-Level 40 TPZ	40 cm	660200
M-Level 60 TPZ	60 cm	660205
M-Level 80 TPZ	80 cm	660210
M-Level 100 TPZ	100 cm	660215

Spirit Level M-Level ECO

Bamboo spirit level – strong, durable, tough and sustainable

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



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.



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



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.



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

FEATURES	SUPPLIED WITH FVE 100
ART.-NO. 800700	
· Water proof camera head and probe · 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas · Camera head with LED lighting · Immediate transfer of the colour image to the large LCD display · 180° image rotation at the press of a button · Direct transfer of image to television or notebook · Accessories: · Hook and magnet attachments for object retrieval · Angle mirror attachment to "view around corners" · Powerful Li-Ion battery with charger	· Video borescope · 1 m flexible gooseneck probe · TV cable · USB cable · Charger · Magnet · Hook · Mirror · Container

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



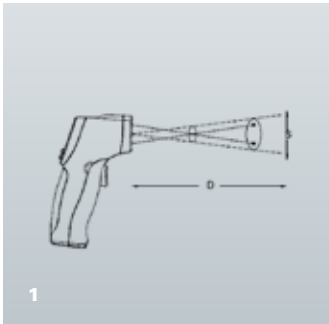
TECHNICAL DATA	FVE 150
Camera head	
Viewable angle	0° and 180°
Focal length	6–7 cm
Viewable distance	5–15 cm
Diameter of camera head	17 mm
Light source	LED
Display	
Display size	3.2"
Resolution	320 x 240 pixel
Image transmission to LCD	Flexible gooseneck
CMOS Image sensor	300.000 pixel
Video output (to TV)	PAL / NTSC
Picture / video formats	JPG / 3 GP
Resolution picture / video	320 x 240 Pixel
Various	
Internal memory	70 MB
Additional memory	4 GB SD-card
	supports up to 8 GB (optional)
Operation languages	EN, FR, DE, ES, IT, FI
Probe length	100 cm
Bend radius of probe	6 cm
Dust / water protection probe / camera	IP 67
Power supply	3.7 V / 2000 mAh Li-Ion
Operating time	4 h
Temperature range	-10 °C to + 50 °C
Humidity range	15 % – 85 % RH
Dimensions	240 x 160 x 100 mm
Weight with probe	0.584 kg

FEATURES	SUPPLIED WITH FVE 150
	ART.-NO. 800710
· Water proof camera head and probe · 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas · Camera head with LED lighting · Immediate transfer of the colour image to the large LCD display · 180° image rotation at the press of a button · Internal memory or SD-card to store images and video sequences · 4 GB SD-card included (supports up to 8 GB) · Date and time indication on the display · Transmission of video clips / images onto television or PC for editing or documentation · Multi-language menu (DE, EN, FR, ES, IT, FI) · Accessories: see FVE 100	· Video borescope · 1 m flexible gooseneck probe · TV cable · USB cable · Charger · Magnet · Hook · Mirror · 4 GB SD-card · Container



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 to +550 °C	-35 °C to +800 °C
Ø measuring spot at 100 cm	80 mm	100 mm
Emissivity	adjustable 0.1 – 1.0	adjustable: 0,1 - 1,0
Laser pointer	yes, dual	yes, dual
Auto data HOLD	yes	yes
Illuminated display	yes	yes
Max, Min	Max only	yes
High and low alarm	yes	yes
Power supply	9 V battery	9 V battery
Response time	< 1 sec	< 1 sec
Resolution display	0.1 °C	0,1°C
Accuracy	± 1 %	± 1 %
Laser class	2	2
Weight	0.178 kg	0,178 kg
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm

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 to +1000 °C
Ø measuring spot at 100 cm	20 mm
Emissivity	adjustable 0.10 – 1.0
Laser pointer	yes, dual
Auto data HOLD	yes
Illuminated display	yes
Max, Min, DIF, AVG record	yes
High and low alarm	yes
Power supply	3.7 V Li-Ion battery
Response time	< 150 ms
Resolution	0.1 °C – 1000 °C
	1 °C over 1000 °C
Temperature range Type-K probe	-50 °C to +1370 °C
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C
Accuracy (TK) (-50 °C to +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
ART.-NO. 800030
- 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

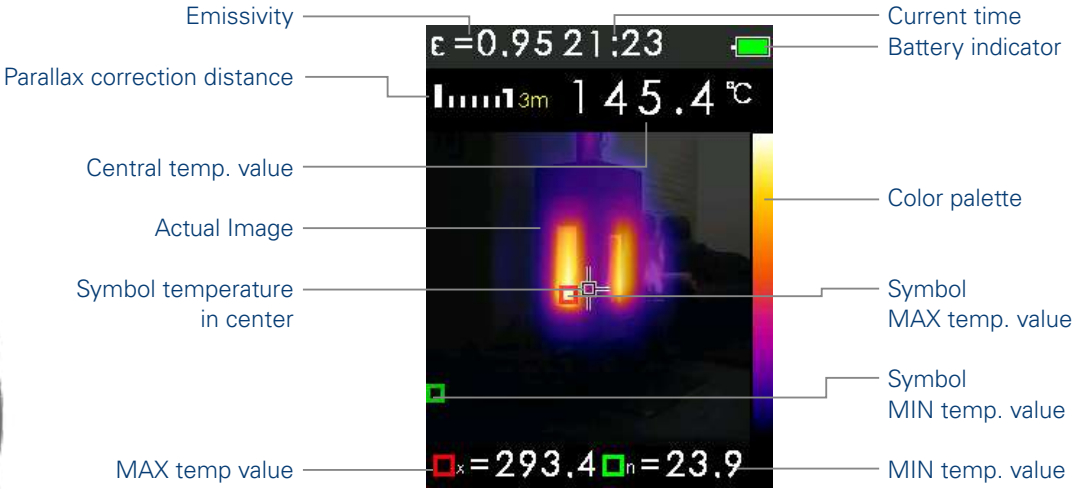


5

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

- Automatic indication of hot / cold spot with configurable alarm function
- PIP-function for blending of visible and infrared image (0-100%) for optimized orientation in the picture
- 6 colour palettes
- Memory for 6000 images / data transfer to PC for subsequent analysis

SUPPLIED WITH FTI 300

ART.-NO. 800040

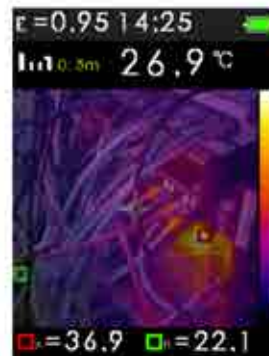
- Li-ion battery & charger
- USB-cable for data transfer and charging
- Hard case



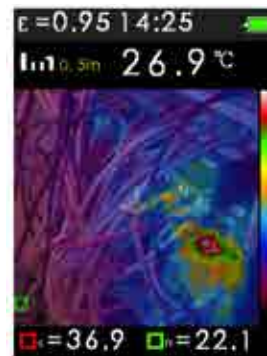
» grey (black)



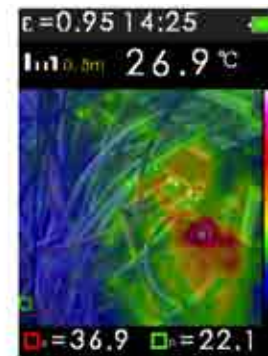
» grey (white)



» Metal



» Rainbow



» High Contrast



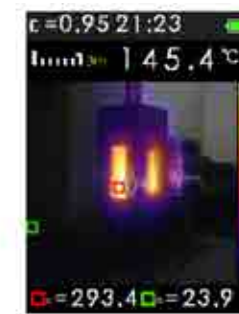
» Hot Metal



» 0%



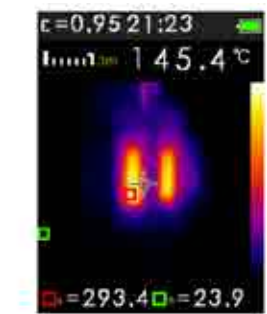
» 25%



» 50%



» 75%



» 100%

TECHNICAL DATA	FTI 300
Thermal imaging	
IR sensor resolution	32 x 31 pixel
Thermal sensitivity	<0,15°C (150 mK)
Field of view (FOV)	40° x 40°
Focusing	Fixed
Colour palettes	6 - greyscale (white hot), greyscale (black hot), ironbow, rainbow, rainbow (high contrast), hot metal
Display	2.2" TFT colour LCD, 320 x 240 pixel
PIP (Blending fusion)	IR image with visible image in 6 steps (0 – 100%)
Infrared temperature measurement	
Temperature range	-20°C to +300°C
Accuracy (at 25°C)	± 2% from reading or ± 2°C
Measurement cursors	3 (centre, max, min)

TECHNICAL DATA	FTI 300
Memory / Data transfer	
Memory	MicroSD card 8 GB
File format / memory size	.bmp / 6000 pictures
PC interface	USB 2.0
Other	
Power supply	3.7 V Li-Ion battery
Menu languages	EN, DE, FR, ES, IT
Weight	410 g
Dimensions	205 x 155 x 62 mm

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
			ART.-NO. 800020
D(istance):S(pot)	50:1	- For non-contact temperature measurement with laser dot 150 ms fast sampling with 1 % accuracy - High temperature range - Built-in dual laser pointers for accurate targeting - Permanent measuring - Compatible with all standard connector Type-K thermocouples - USB interface - Memory for 99 measurements - Easy transmission of data to PC via USB interface	- Battery - USB cable - Mini tripod - Type-K temperature probe - Case
Temperature range	-50 °C to +1600 °C		
Ø measuring spot at 100 cm	20 mm		
Emissivity	adjustable 0.10 – 1.0		
Laser pointer	yes, dual		
Auto data HOLD	yes		
Illuminated display	yes		
Max, Min, DIF, AVG record	yes		
Power supply	9 V battery		
Response time	Less than 150 ms		
Resolution	0.1 °C – 1000 °C		
	1 °C over 1000 °C		
Temperature range Type-K probe	-50 °C to +1370 °C		
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C		
Accuracy (TK) (-50 °C – +1370 °C)	± 1.5 % of reading + 3 °C		
Laser class	2		
Weight	0.3 kg		
Dimensions	204 x 155 x 52 mm		

TECHNICAL DATA	FHT 70 DATALOG	
Function	Range	Basic accuracy
Relative humidity	0 % – 100 % RH	± 3.0 %
Temperature	-40 °C to + 70 °C	± 1 °C
Logging rate	1 sec to 24 h	
Operating temperature	-35 °C to +80 °C	
Power supply	3.6 V Lithium	
Size	132 x 66 x 37	
Weight	180 g	
FEATURES	SUPPLIED WITH	
- Measures temperature and air humidity - Internal memory for 32.700 readings (3 x 10.900) - Selectable measurement cycle from 1 sec to 24 h - LCD with date, time, temperature, humidity, limit value - Software for analysis	ART.-NO. 800120 3.6 V lithium battery - Software - Clamshell	

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.

TECHNICAL DATA	FHT 60	FHT 100	FEATURES
ART.-NO.	800100	800110	
Temperature range	-20 °C to +60 °C	-30 °C to +100 °C	- Fast measurement of relative humidity and temperature FHT 100 - Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature)
Humidity range	0 % – 100 % RH	0 % – 100 % RH	
Fast response time	yes	yes	
Illuminated display	yes	yes	
Max HOLD	yes	yes	
Data HOLD	yes	yes	
Dewpoint temperature	no	-30 °C to +100 °C	
Wet bulb temperature	no	0 °C to +80 °C	
Accuracies:			
Humidity	± 3.5 % RH	± 2 % RH	
Temperature	± 2 °C	± 0.5 °C	SUPPLIED WITH FHT 60 & FHT 100 - Case - Battery
Dewpoint	–	± 0.5 °C	
Wet bulb	–	± 0.5 °C	

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	FHM 10	FEATURES
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		

SUPPLIED WITH FHM 10

ART.-NO. 800310

- CR2032 batteries

FHM 20 Moisture Meter



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

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

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

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

* Average adjustment for European wood at 20°C

FEATURES	SUPPLIED WITH
· 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)	ART.-NO. 800320 · Moisture and temperature probe · Padded bag · 2 x spare measuring pins · 2 x AAA Batteries

1 Moisture and temperature probe



FFM 100 Moisture Detector



- » Quick non-destructive measurement of surface humidity up to 40 mm measuring depth.
- » **Trades and tasks:** Building materials, concrete floors, walls, ceilings.

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

FEATURES
Quick measurement of humidity in building materials without destruction of the surface · Indication of minimum / maximum values · Sensor type: metal spheroid
SUPPLIED WITH
ART.-NO. 800650
· Set of batteries



FTA 1 Thermometer- Anemometer

- » A professional remote vane thermo-anemometer for measuring air velocity, air flow and temperature.
- » **Trades and tasks:** Ventilation and air-conditioning: installation of ventilation systems, measurements of air flow and temperature; agriculture: crop spraying, ventilation surveys and crop storage; environmental monitoring.

TECHNICAL DATA	FTA 1		
Air velocity	Measuring range	Resolution	Accuracy
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
Air flow	Measuring range	Resolution	Accuracy
CMM (m³/min)	0 – 999,900	0.001	0 – 999.9 m²
CFM (ft³/min)	0 – 999,900	0.001	0 – 999.9 ft²
Air temperature	Measuring range	Resolution	Accuracy
°C	-10 °C to +60 °C	0.1 °C	± 2 °C
°F	14 °F – 140 °F	0.1 °F	± 4 °F
Various			
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

ART.-NO. 800450

- 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.

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	PROPERTIES
Analogue AC/DC output		yes	
to analyzer or recorder			
IEC 651 Type 2 standard		yes	
Built-in calibration check		yes	
Accuracy at 94 dB		1.5 dB	
Operation temperature		0 °C to +40 °C	
Operation humidity		< 80 % RH	· For quick check of sound level · Standard IEC 651 type 2

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

TECHNICAL DATA		FGD 1	PROPERTIES
			· 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
Sensitivity		50 ppm	
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

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

TECHNICAL DATA	FCT 1 DATA	
	Probe F	Probe N
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	0 – 850 µm (± 3 % + 1.5 µm) 0 – 33.46 mils
	(± 3 % + 0.039 mils)	(± 3 % + 0.059 mils)
	850 – 1250 µm (± 5 %)	850 – 1250 µm (± 5 %)
	33.46 – 49.21 mils (± 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 to +40 °C	0 °C to +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

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	FEATURES
Maximum measuring range	400,000 Lux	· Measuring range 0 to 400,000 Lux
Accuracy	± 5 % ± 10 d (< 10,000 Lux) ± 10 % ± 10 d (> 10,000 Lux)	· Sampling rate 1.5 times / sec
Resolution	0.1 Lux	· Large LC display
Sampling rate	1.5 times / sec	· Measuring range 4,000 digits
Data HOLD function	yes	· 41 analogue bargraph indication
Automatic power-off	yes	· 99 values in memory for direct reading on the meter
Output	USB	· 16,000 values can be stored in data logger
Power supply	9 V NiMH	· Max / Min function
Size photo detector	115 x 60 x 27 mm	· High accuracy and short response time
Size instrument	203 x 75 x 50 mm	· USB-interface
Weight	390 g	

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

- All-purpose probe TP-500
- Set of batteries
- Case
- Testing cable

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

* numerical

Accessories for Environmental Measuring Equipment

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



» NR-31B



» NR-33



» NR-38



» TP-300



» TP-500



» TP-550



» NR-88B

ACCESSORIES

OUR INVITATION:
ALWAYS NEW CHALLENGES TO
CONQUER.

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





Wall adapter WS 1



WALL ADAPTER WS 1

ART.-NO. 290560

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



Floor-to-Ceiling Pillar KS 3



FLOOR-TO-CEILING PILLAR KS 3

ART.-NO. 520100

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

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.



- » Example

ADAPTER FOR S-DIGIT MINI +

ART.-NO. 290750

SH2 Scaffold clamp holder



SH2 SCAFFOLD CLAMP HOLDER

ART.-NO. 320610

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

Laser glasses



LASER GLASSES RED

ART.-NO. 253000

LASER GLASSES GREEN

ART.-NO. 253001

- Laser intensive glasses for better visibility of laser beam

Adapter 5814



ADAPTER 5814

ART.-NO. 290550

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

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



» FS 10

» FS 12

FS 10

ART-NO. 302000

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

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

FS 12

ART-NO. 303000

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

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

FS 13 (2.95 m) Elevating Tripod

FS 13

ART-NO. 304000

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

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



FS 14 (1.61m) Camera Tripod

FS 14

ART-NO. 301000

- Rotating head
- 57–161 cm
- 1.4 kg

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



FS 30-XS (3.00 m) Elevating Tripod



FS 30-XS

ART-NO. 165

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

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

Tripod Floor Stand



TRIPOD FLOOR STAND

ART-NO. 170

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

FS 40 (1.86 m) Aluminium Tripod



FS 40

ART.-NO. 150

- Column / Flat head
- 95–186 cm (incl. 30 cm centre column)
- 3.2 kg

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

FS 30-S (1.38 m) Elevating Tripod



FS 30-S

ART.-NO. 155

- Column / Flat head
- 68–138 cm
- 4.2 kg

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

FS 30-M (2.00 m) Elevating Tripod



FS 30-M

ART.-NO. 158

- Column / Flat head
- 80–200 cm
- 5.2 kg

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

FS 30-L (2.85 m) Elevating Tripod



FS 30-L

ART.-NO. 156

- Column / Flat head
- 95–285 cm
- 8.2 kg

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

FS 50-M (2.20 m) Elevating Tripod



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
- 5/8" Thread

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

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
- 5/8" Thread

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

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



FS 24

ART.-NO. 154

- Flat head
- 105–170 cm
- 5.4 kg

FS 24 W/S

ART.-NO. 154 W/S

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

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

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

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



FS 24-M W/S

ARTIKEL-NO. 162 W/S

- Flat head Ø 17 cm
- 105 – 170 cm
- 5/8" Thread
- 5.5 kg

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

Builders' Tripod BT (1.47 m) 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
- 5/8" Thread

FS 20 FS 20-D (1.65 m) 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
- 5/8" Thread

Aluminium Tripod FS 20-D

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

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



FS 23

ART.-NO. 152

- 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
- 5/8" Thread

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



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

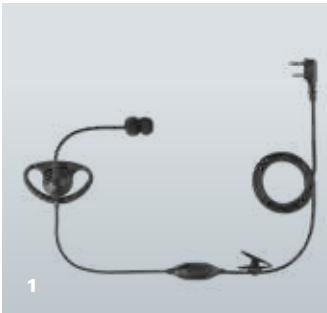
F6

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 to +55 °C
Dust / water protection		IP 54
Shock / vibration		MIL STD 810 C/D/E & TIA/EIA 603
Working ranges		
outside, open terrain		5 km
outside, area between buildings		3 km
OPTIONAL ACCESSORIES		OPTIONAL ACCESSORIES
F6-HM MICROPHONE		F6-EM EARPHONE
ART.-NO. 870100		ART.-NO. 870150
· F6-HM hand microphone with jacket clip		· F6-EM earphone / clip microphone

FEATURES	
· Clear audio quality	· PC programmable (optional):
· Automatic noise reduction	· Frequency, functions and settings can be set by the optional programming software
· TOT Time-out timer to stop transmitting automatically	
· Monitoring function	
· DCS/CTCSS encoder and decoder prevents interference in the same frequency	
· Housing made of die-cast and high-resistant plastic	
· Powerful lithium polymer rechargeable battery	
· Battery saving mode	
· Channel annunciation in English language	
· LED shows receipt, transmission and battery status	
· European wide licence and toll-free usable	

SUPPLIED WITH	
ART.-NO. 870000	
· 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	FEATURES	
Measuring depth		60 cm	· Detection of all kinds of metals · Handle adjustable, length 114 – 139 cm · Headphone jack	
Operating time		30 h		
Measuring disc		Ø 24 cm		
Dust / water protection measuring disc		IP 67	SUPPLIED WITH	
Weight		2.0 kg		
Weight		3.3 kg with case and box		
			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 1801

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



» FM 1800

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 H3-120 MM

Paddles for mixers

FM 1010 and FM 1800

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



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

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



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

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



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

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



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

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



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

QUALITY & SERVICE

INFORMATION AND SUPPORT







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

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

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

Our extensive experience has convinced customers, for many years.

Our quality standard

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

*DKD = German Calibration Office



Our product range

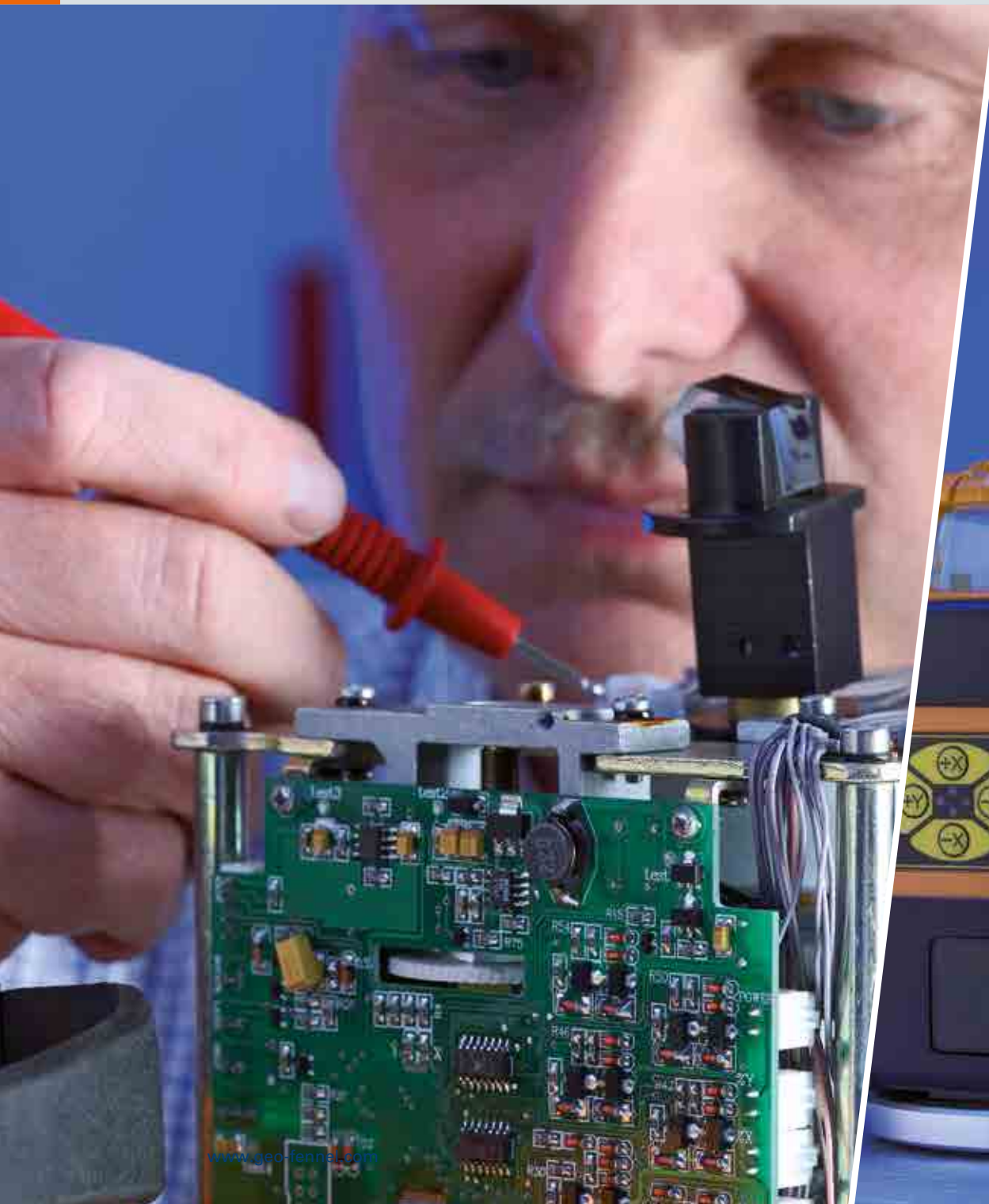
» Our product range includes:

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.

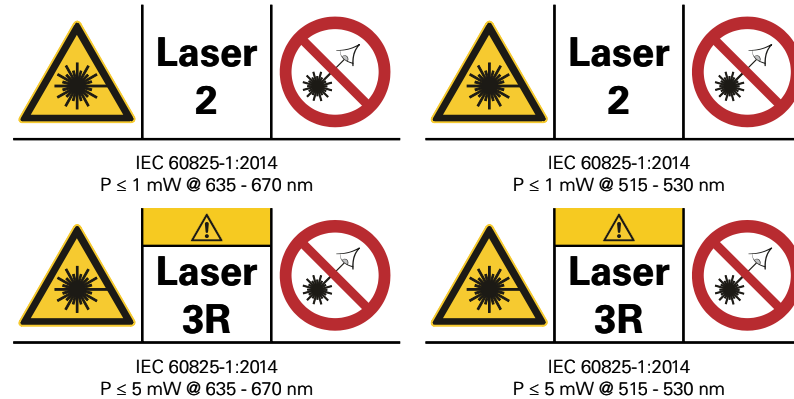


Laser classification according to DIN EN 60825-1:2014

» 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 – Product functions

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



» Automatic TILT Function

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



» Vibration-Wind-Security (VWS)

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



» Remote control function

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



» Zonal control

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



» Li-Ion battery technology

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

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



» PowerSwitch Technology

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



» Tracking Function

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

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

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

IP Protection class according to DIN EN 60529

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

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



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

geo-FENNEL F6 Two-way Radio

- » The F6 is a PMR 446 channel (Private Mobile Radio) licence free Two-way Radio and works between the frequency band 446–446.1 MHz. The PMR (Private Mobile Radio) 446 service has been introduced following the adoption by the CEPT/ERC1 of the Decisions ERC/DEC/(98) 25, 26 and 27.
- » This type of radio can be used by anyone anywhere in the EU registration area totally fee free. They can have a maximum RF Output power of 500 mW and have an approx. maximum range of 5 km.

SET ASIDE THE BAND 446.0 - 446.1 MHZ FOR A PMR 446 SERVICE, WITH A CHANNEL PLAN BASED ON 12,5 KHZ SPACING:

Channel 1 = 446,00625 MHz
Channel 2 = 446,01875 MHz
Channel 3 = 446,03125 MHz
Channel 4 = 446,04375 MHz

Channel 5 = 446,05625 MHz
Channel 6 = 446,06875 MHz
Channel 7 = 446,08125 MHz
Channel 8 = 446,09375 MHz

Lasers with red or green laser diode

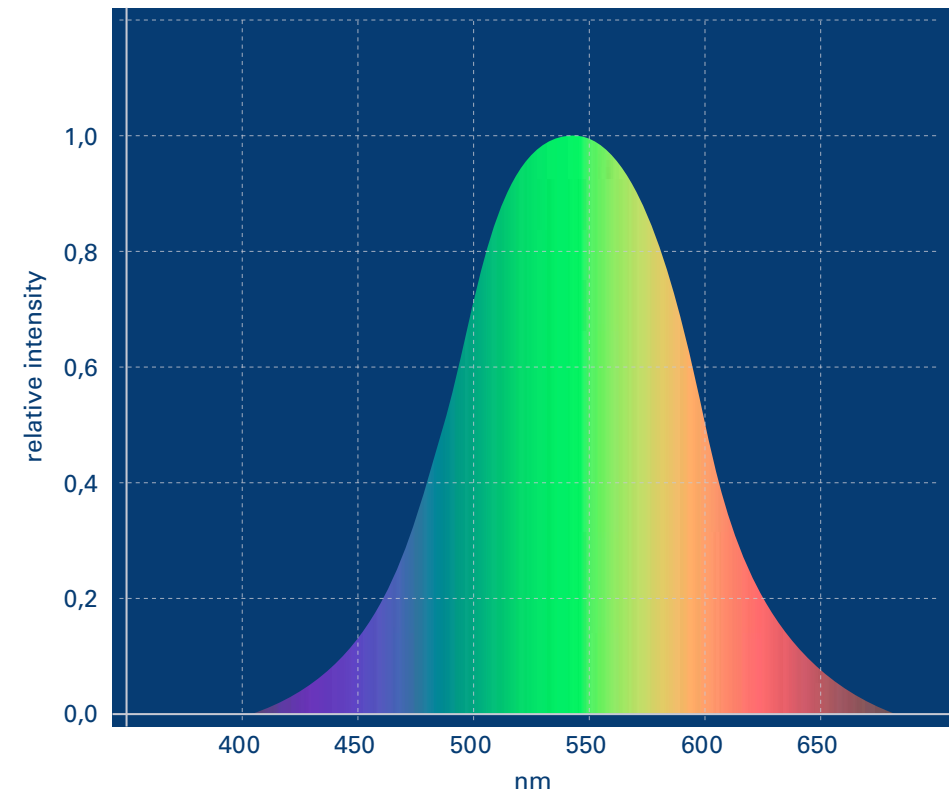
» The human eye can see the different wavelengths (measuring unit 'nm') of the visible colour spectrum in different intensities. The optimum is at 555 nm. Green light is situated in the middle of this range and can be perceived much higher compared to red light.

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

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

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

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





maxi Sales Display

MAXI

ART.-NO. 111000

Dimensions

- 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





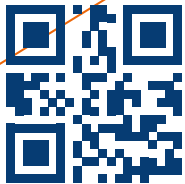
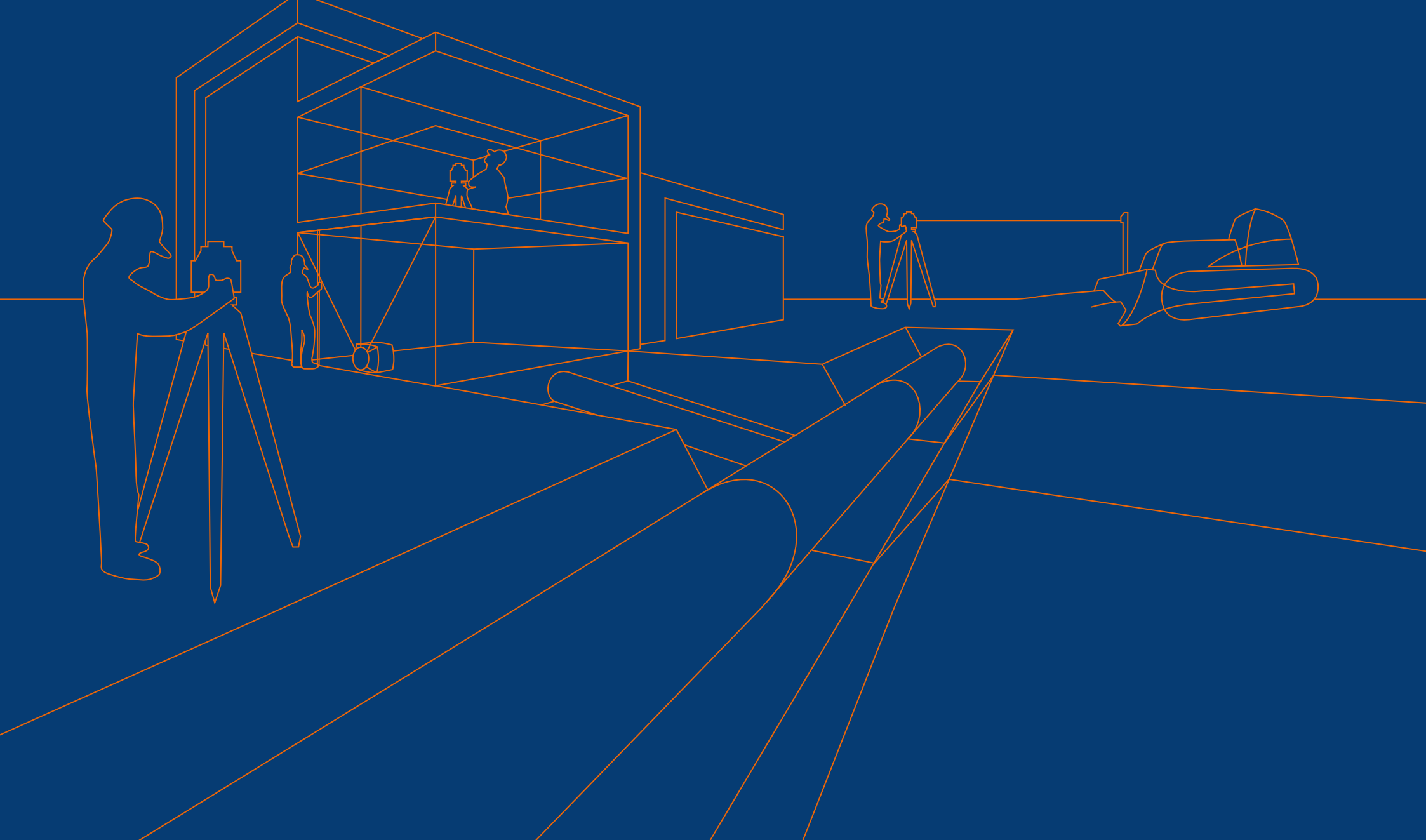
Tailor-made information.

- » 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



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