



2018

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	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
TASK															
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	■							■		■	■	■			■
Dual Grade Laser horizontal / vertical	■						■	■		■	■	■		■	■
Horizontal and Vertical Laser			■	■	■	■	■	■	■	■	■	■	■	■	■
Pipe Laser								■							
Theodolite							■	■				■			■
Automatic Level	■						■	■			■	■			■
Laser Distance Meter		■		■	■	■	■		■			■	■		■
Inclinometers		■	■	■	■	■	■		■			■			■

LINE LASERS

PRECISION IN EVERY ASPECT: OUR ALL-ROUNDERS

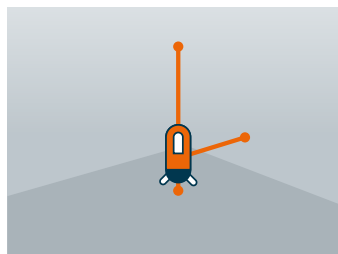
Every single device in our range of line lasers is a winner. We provide individual products that are exactly adapted to your particular needs. As different as these demands may be, one thing is true for all geo-FENNEL line lasers: They consistently impress users with a high degree of precision and guarantee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





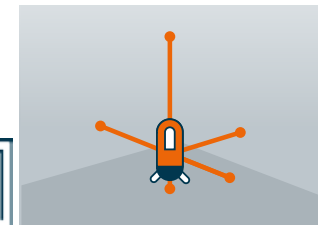
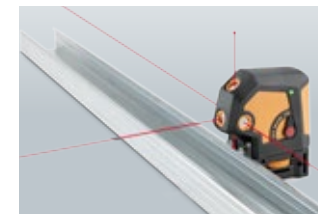
Geo3P 3-Point Laser Plumb up and down

- » Self-levelling laser plummet for easy plumbing from floor to ceiling. 3 Laser points at right angles.
- » Compact and handy size. Shock-resistant design suitable for robust use on construction sites.



Geo5P 5-Point Laser Five directions

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



TECHNICAL DATA	GEO3P	FEATURES	SUPPLIED WITH	TECHNICAL DATA	FEATURES	SUPPLIED WITH
Self-levelling range	± 3.5°	<ul style="list-style-type: none"> · 3 laser dots (up, down, forward) · 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 	<ul style="list-style-type: none"> · ART.-NO. 555030 · Multi-functional mount · Magnetic target · 3 x AA Alkaline battery · Padded carrying bag 	± 3.5°	<ul style="list-style-type: none"> · 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 	<ul style="list-style-type: none"> · ART.-NO. 555050 · Multi-functional mount · Magnetic target · 3 x AA Alkaline battery · Padded carrying bag
Accuracy	± 2 mm / 10 m			± 2 mm / 10 m		
Working range	30 m*			30 m*		
Laser diode / laser class	635 nm / 2			635 nm / 2		
Power supply	3 x AA Alkaline			3 x AA Alkaline		
Operating time	20 h			20 h		
Temperature range	-10 °C – +50 °C			-10 °C – +50 °C		
Dust / water protection	IP 54			IP 54		
Weight (instrument only)	0.5 kg			0,5 kg		
	* depending on room illumination					

CrossPointer5 SP

6 reference points plus a laser cross

Selection PRO



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

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



CrossPointer5 SP 1

Intuitive interface 2

Multi-functional mount 3



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

360° LinerPoint HP

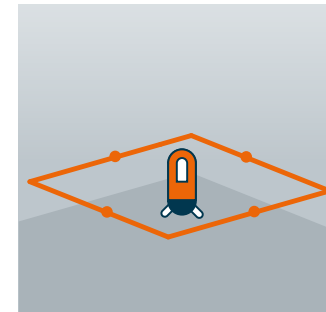
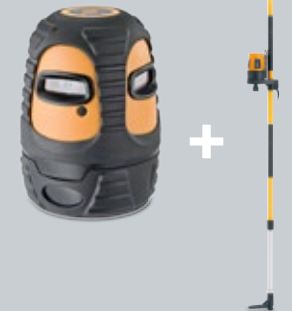
Unique – 360° line with 4 laser points



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

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

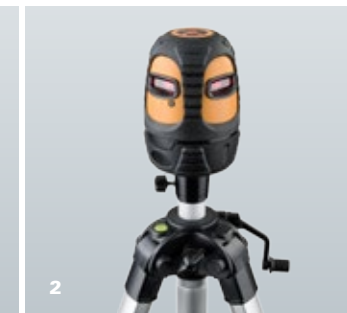
ART.-NO. 510000-S01



Bag with 360° LinerPoint HP 1

Mounted on Tripod 2

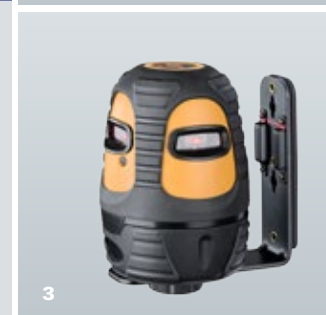
Wall / tripod bracket 3



TECHNICAL DATA	360° LINERPOINT HP
Self-levelling range	± 5°
Accuracy	± 3 mm / 10 m
Working range w/o receiver	20 m*
Working range with receiver	60 m (optional)
Power supply	4 x AA Alkaline
Working time	8 h
Dust / water protection	IP 54
Laser diode	635 nm
Laser class	2
Temperature range	-10°C bis +40°C
	* depending on room illumination

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

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



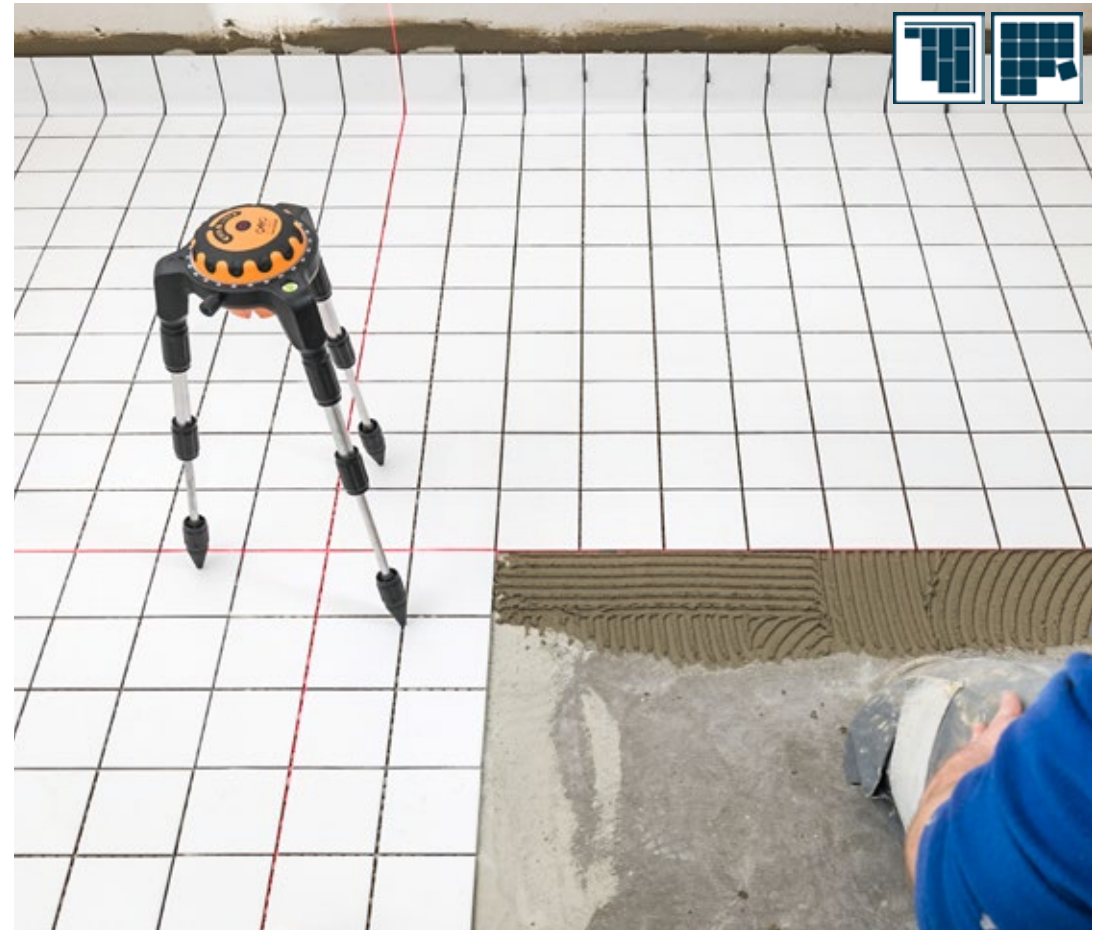
OPTIONAL ACCESSORIES RECEIVERS FR 55 & FR 55-M	
FR 55	ART.-NO. 500510
FR 55-M	ART.-NO. 500520



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

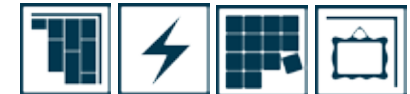


TECHNICAL DATA	GEOSPIDER	FEATURES	SUPPLIED WITH GEOSPIDER
			ART-NO. 552000
Accuracy	± 3 mm / 10 m	<ul style="list-style-type: none"> · High visibility laser lines achieved by our new innovative design · Independently height adjustable legs for optimum results over the full working range · Laser lines switchable separately · Fine motion control for accurate alignment · Fully rotatable laser head with 360° graduation for optimum flexibility · Integrated circular bubble for manual levelling on uneven surfaces 	<ul style="list-style-type: none"> · 4 x AA Alkaline battery · 2 x Magnetic target · Padded bag
90° Angle accuracy	± 3 mm / 10 m		
Working range	40 m*		
Dust/water protection	IP 52		
Laser class	2		
Operating time	12 h		
Temperature range	-10°C – +45°C		
	*depending on room illumination		

Square Liner II

At the right angle

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



TECHNICAL DATA	SQUARE LINER II
Accuracy	± 3 mm / 10 m
Working range	max. 30 m*
Laser diodes	2 x 635 nm
Laser class	2
Power supply	2 x 1,5 V AA Alkaline
Operating time	48 h
Temperature range	0°C - +40°C
	* depending on room illumination
FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> · Fine and clear visible laser lines · 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling · Built-in circular and tubular vials for horizontal and vertical alignment 	ART.-NO. 551000 <ul style="list-style-type: none"> · Batteries · Magnetic target · Case





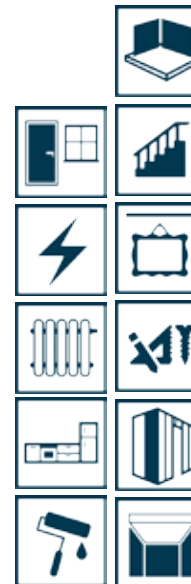
FL 10-Cross

The universal laser for interior work

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



» FL 10-Cross SET



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

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

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





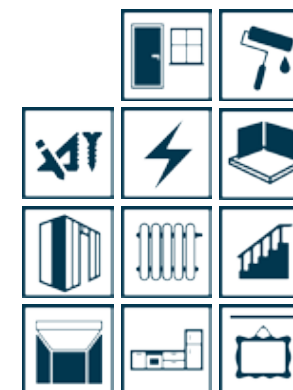
FL 40-PowerCross SP

Convincing along the whole line

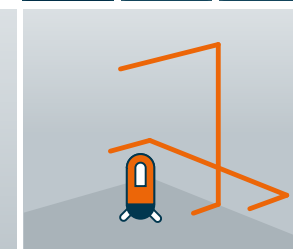
Selection PRO

» FL 40 PowerCross 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)
- » Extremely rugged design suitable for use on the most demanding construction site - drop tested to 1m. The sturdy technical design eliminates the need for a transport lock.



- 1 Manual mode
- 2 One button keypad



SUPPLIED WITH
FL 40-POWERCROSS SP

ART.-NO. 541500

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

SET FL 40-POWERCROSS SP +
FLOOR-TO-CEILING PILLAR KS3

ART.-NO. 541500-S01



TECHNICAL DATA	FLG 40-POWERCROSS SP	FL 40-POWERCROSS GREEN SP
Self-levelling range	± 3°	± 3°
Accuracy	± 3 mm / 10 m	± 3 mm / 10 m
Working range	30 m* (radius)	40 m* (radius)
Fan angle horizontal	135°	135°
Fan angle vertical	150°	150°
Power supply	3 x AA Alkaline	3 x AA Alkaline
Operating time (all lines on)	40 h	9 h
Dust/water protection	IP 54	IP 54
Laser diode / class	2	2
Temperature range	-10 °C to +45 °C	0 °C to +40 °C
Weight (with battery)	0,4 kg	0,4 kg
	*depending on room illumination	

- FEATURES**
- 1 Laser cross
 - Laser lines switchable separately
 - TILT function for manual use
 - Visual alarm when out of level
 - 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



FLG 40-PowerCross GREEN SP Convincing along the whole line

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

- » · The new Selection PRO GREENLASER-Technology!
- Outstanding visibility of the laser line up to 40 m
- A clear narrow laser line
- Very long vertical line with 150° fan angle (beyond zenith)
- Self-levelling function can be switched off for manual use
- Extremely rugged design suitable for use on the most demanding construction site – drop tested to 1 m. The sturdy technical design eliminates the need for a transport lock.

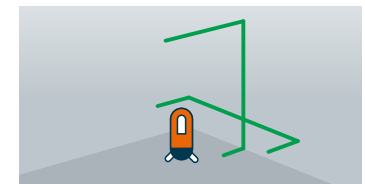


 green laser

SUPPLIED WITH
FLG 40-POWERCROSS GREEN SP

ART.-NO. 541550

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



Geo3X HP

Small but powerful

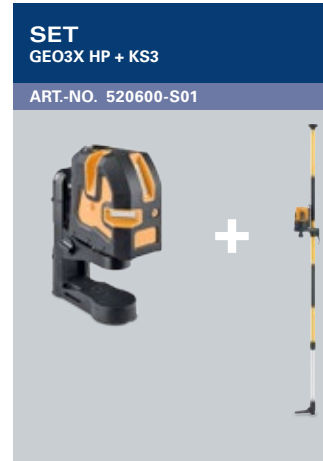


- 1 Intuitive interface
- 2 Fits with Fixing Systems



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

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



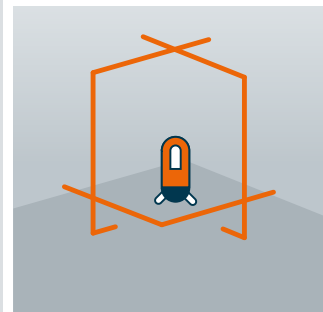
SET
GEO3X HP + KS3

ART.-NO. 520600-S01

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

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

- SUPPLIED WITH**
- ART.-NO. 520600
- Multi-functional mount
 - 3 x AA Alkaline battery
 - Padded carrying bag







SET
GEO5X-L360 HP + TRIPOD FS 12

ART.-NO. 533000-S03





FL 63

Fully automatic multi-line laser

» **The all-rounder.**

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



SUPPLIED WITH

ART.-NO. 500350

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



TECHNICAL DATA	FL 63
Self-levelling range	± 3,5°
Accuracy	± 3 mm / 10 m
Working range	20 m* (radius)
Power supply	4 x AA Alkaline
Operating time (all lines switched on)	6 h
Dust/water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	1,0 kg
	*depending on room illumination

FEATURES
· 4 vertical lines at 90° to each other
· 1 horizontal line
· Plumb down beam
· Laser lines switchable separately
· Plumbing function
· Self-levelling function can be locked for manual use
· Visual and audible alarm when out of self-levelling range
· Integrated floor tripod
· 360° circle
· 5/8" connection at the instrument bottom

FLG 64 GREEN HP

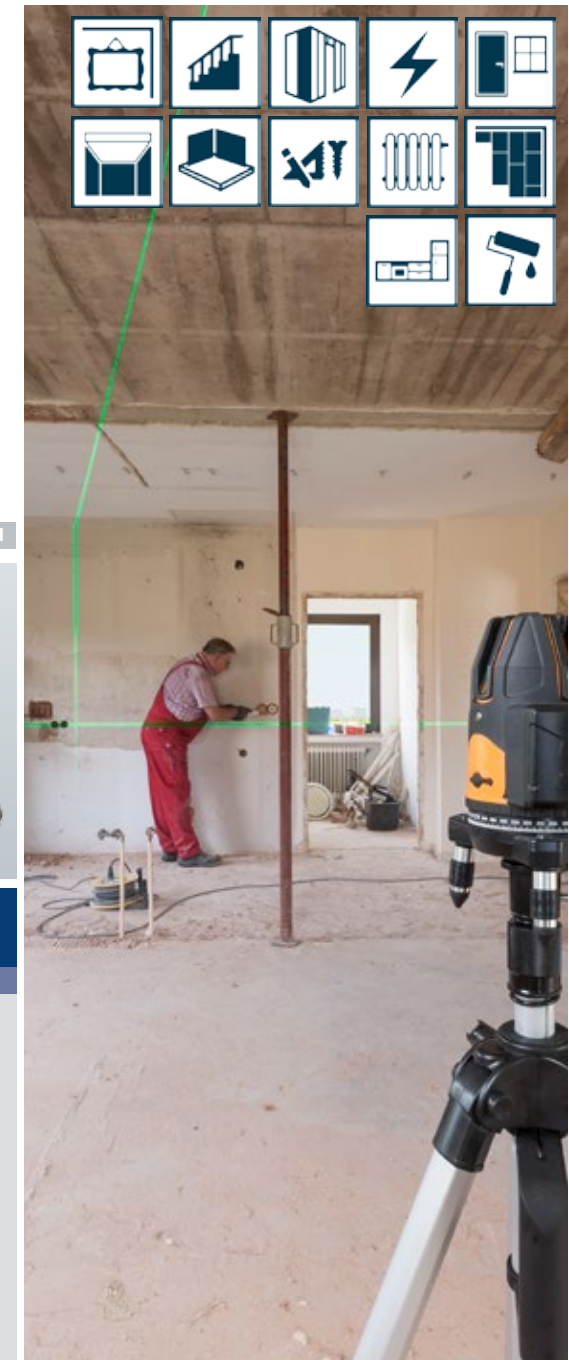
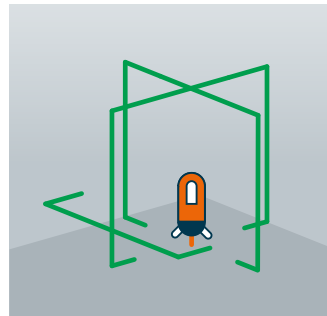
Green laser lines for exceptional visibility

- » 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)



 green laser

Intuitive Control Panel 1



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

FL 66-Xtreme SP

The toughest

Selection PRO

» FL 66 Xtreme is a Selection PRO product with special features.

» This new generation of cross line laser withstand adverse conditions and rough handling on construction sites.

- Rugged technical design: Stable internal components secure function and accuracy
- Perfect sealing assures dust & water protection according to IP 65
- Battery problems? Not with FL 66 Xtreme with the advantages of Li-Ion battery technology
- Outstanding visibility of the laser lines up to 30 m*

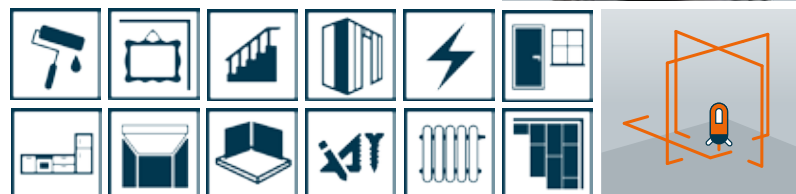
SUPPLIED WITH
FLG 66-XTREME SP

ART.-NO. 580500

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

SET
FL 66-XTREME SP+TRIPOD FS 12

ART.-NO. 580500-S01



TECHNICAL DATA	FL 66-Xtreme SP	FLG 66-Xtreme GREEN	FEATURES
Self-levelling range	± 2°	± 2°	<ul style="list-style-type: none"> · 4 vertical lines at 90° to each other · 1 horizontal line 130° · Plumb down beam · Laser lines switchable separately · Plumbing function · Self-levelling function can be locked for manual use (inclined applications) · Audible and visible alarm when out of level · Integrated floor tripod · Slow motion screw for horizontal alignment · Use with receiver (optional)
Accuracy	± 2 mm / 10 m	± 2 mm / 10 m	
Working range without receiver	30 m* (radius)	40 m* (radius)	
Working range with receiver	80 m (radius)	100 m* (radius)	
Laser diode / class	635 nm / 2	- / 2	
Operating time (all lines switched on)	15 h	15 h	
Power supply	Li-Ion Alkaline batteries (optional)	Li-Ion Alkaline batteries (optional)	
Charger can be used as power supply	yes	no	
Dust/waterprotection	IP 65	IP 65	
Temperature range	-10°C to +45°C	0 °C – +40 °C	
Weight (instrument with battery)	1.4 kg	1.4 kg	

* depending on room illumination

FLG 66-Xtreme GREEN SP

The toughest – red or green, your decision

» **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

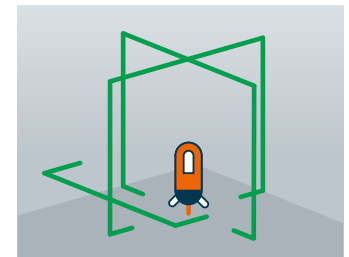
- Outstanding visibility of the laser line up to 40 m
- A clear narrow laser line

» 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



 green laser



SUPPLIED WITH
FLG 66-XTREME GREEN SP

ART.-NO. 580550

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

FL 69 Ultra-Liner HP Revolutionise setting-out



» The latest innovation in our line laser range.

- » · 8 laser dots intersecting the laserlines for increased visibility in unfavorable light conditions:
 - 4 laser dots at the intersections of the horizontal and vertical lines
 - 4 laser dots intersecting the vertical lines at 45° to the horizontal
- Multiple laser line and dot options with 8 laser dots, 5 laser crosses, 4 vertical lines, 360° horizontal line and a plumb down beam individually selectable
- Li-Ion battery technology



TECHNICAL DATA	FL 69 HP
----------------	----------

Self-levelling range	± 3°
Accuracy	± 2 mm / 10 m
Working range w/o receiver	20 m*
Working range with receiver	60 m
Power supply	Li-Ion
Operating time	6 - 14 h**
Dust / water protection	IP 54
Laser diode	635 nm
Laser class	2
Temperature range	-10 °C – +45 °C
Weight	1.2 kg

* depending on room illumination

** depending upon the number of lines in use

SUPPLIED WITH FL69 HP OHNE EMPFÄNGER

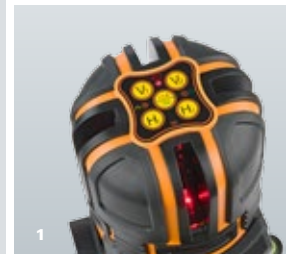
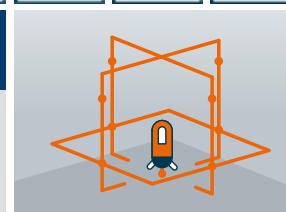
- ART.-NO. 581500
- Integrated floor tripod
 - Li-Ion battery pack and intelligent charger
 - Magnetic target
 - Laser glasses
 - Adapter for tripod connection
 - Battery case for optional use of alkaline batteries
 - Hard carrying case

SUPPLIED WITH FL69 HP + FR 55

- ART.-NO. 581510
- Receiver FR 55
 - Integrated floor tripod
 - Li-Ion battery pack and intelligent charger
 - Magnetic target
 - Laser glasses
 - Adapter for tripod connection
 - Battery case for optional use of alkaline batteries
 - Hard carrying case

FEATURES

- 5 laser crosses
- 4 vertical lines at 90° to each other
- 360° horizontal line
- Laser cross to the ceiling
- Plumb down beam
- 8 laser dots
- Self-levelling function can be switched off for manual use
- Use with receiver FR 55 to extend the working range up to 60 m
- Slow motion screw for fine adjustment
- Audible and visible alarm when out of level
- Integrated floor tripod
- 5/8" thread for use with standard tripod



Control panel 1



SET
FL 69 ULTRA-LINER HP + FR 55 + TRIPOD FS 12

ART.-NO. 581510-S01



SET
FL 69 ULTRA-LINER HP + TRIPOD FS 12

ART.-NO. 581500-S01



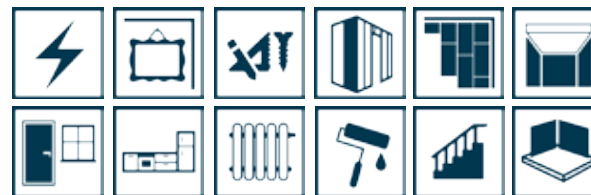


Selection PRO

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

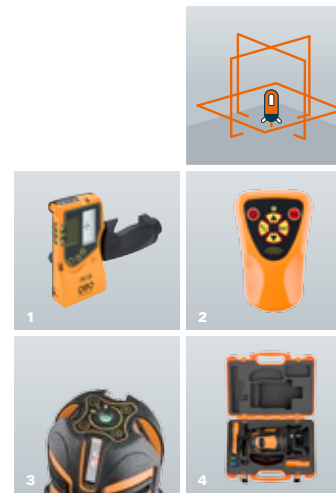


Receiver FR 55 for 80 m work range **1**

Remote control **2**

With circular level on top **3**

Case with FR 70 Premium-Liner and Equipment **4**



SET
FL70 HP PREMIUM-LINER SP + TRIPOD FS 12
ART.-NO. 582010-S01

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



SET
FL70 HP PREMIUM-LINER SP + FR 55 + FS 12
ART.-NO. 582000-S01



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

FEATURES
· 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

SUPPLIED WITH FL 70 PREMIUM-LINER SP
ART.-NO. 582010
· Receiver FR 55 with clamp
· Integrated floor tripod
· Remote control
· Li-Ion batteries and battery charger
· Magnetic target
· Laser glasses
· Adapter for tripod connection
· Compartment for alkaline batteries
· Container



FL 1000 HP

State-of-the-art

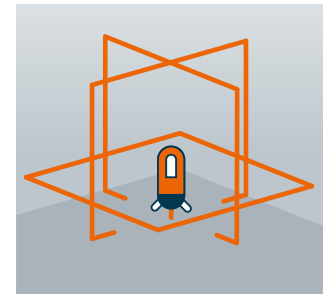
» **With combi-receiver FR 10.**
Detect rotating beams and line laser with one device.

» 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.



Selection PRO



SUPPLIED WITH

ART.-NO. 585020

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

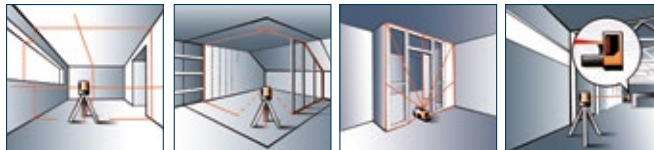
RECEIVER FR 10 FOR FL 1000 HP

ART.-NO. 585510



1 Remote control

2 Hard case



TECHNICAL DATA	FL 70 PREMIUM-LINER SP	FEATURES
Self-levelling range	± 5°	<ul style="list-style-type: none"> · Electronic self-levelling · Horizontal rotating laser beam, visible · 4 vertical laser lines at 90° to each other · Laser cross to the ceiling · Plumb down beam · TILT function · Slope setting · Combi-receiver for rotating and line beams · Remote control · On / off remote control · Adjustable 360° circle · Slow motion screw · Automatic shut-off / audible alarm when out of level · Integrated floor tripod · 5/8" thread for builders' tripod
Power supply	NiMH / Alkaline	
Operating time	10 h	
Charger = power supply	yes	
Laser diode / Laser class	635 nm / 2	
Temperature range	-10 °C – +40 °C	
Weight	2,85 kg	
Dust / waterprotection	IP 54	
Rotating laser		
Accuracy	± 1 mm / 10 m	
Gradual slope setting in X and Y axis	± 5° (± 9%)	
TILT-function	yes	
Working range without receiver Ø	40 m*	
Working range with receiver Ø	400 m	
Scanning without receiver	30 m*	
Scanning range	10/30/60°	
Rotating speed rpm	200, 500	
Line laser		
Accuracy	± 2 mm / 10 m	
Working range without receiver	20 m*	
Working range with receiver	60 m	
	* depending on room illumination	

EasyTRACK for Line Lasers

Optimum alignment - the quick and easy way

- » **Universally compatible with any line laser with pulse function.**
- » 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



» EasyTRACK Base



» EasyTRACK Receiver



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

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

FEATURES

- 360° horizontal orientation in motorised mode
- Automatic axis alignment of the vertical line with on-level position of receiver
- Receiver can be used as remote control to position the laser line to any desired point
- Manual slow motion screw for axis alignment
- For line lasers with either red or green beam
- works with all line lasers from geo-FENNEL which incorporate the pulse function

SUPPLIED WITH EASYTRACK

ART.-NO. 290900

- EasyTRACK Base
- EasyTRACK Receiver
- 4 x AA batteries (Base)
- 3 x AA batteries (Receiver)
- Soft bag



FPL P & FPL L Positioning Laser

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



» FPL P-5

» FPL P-5
FPL L-5

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

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

FPL C Positioning Cross Laser



» FPL C-5
FPL C-10
FPL C-20

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

TECHNICAL DATA	FPL P-5	FPL L-5	FPL L-10	FPL L-20	FPL C-5	FPL C-10	FPL C-20
	ART.-NO. 519205	ART.-NO. 519005	ART.-NO. 519010	ART.-NO. 519020	ART.-NO. 519105	ART.-NO. 519110	ART.-NO. 519120
Visible laser line	red	red	red	red	red	red	red
Laser wave length	635 nm	635 nm	635 nm	635 nm	635 nm	635 nm	635 nm
Integrated laser diode	5 mW	5 mW	10 mW	20 mW	5 mW	10 mW	20 mW
Laser output power	< 1 mW	< 1 mW	< 1 mW	< 5 mW	< 1 mW	< 1 mW	< 5 mW
Laser class	2	2	2	3R	2	2	3R
Focusing	-	0 – 10 m focusable	0 – 10 m focusable	0 – 10 m focusable	10 m	10 m	10 m
Fan angle	-	84°	84°	84°	120°	120°	120°
Temperature range	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C
Dust / water protection	IP 41	IP 41	IP 41	IP 41	IP 43	IP 43	IP 43
Dimensions (without mount)	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 41 x 55 mm	Ø 41 x 55 mm	Ø 41 x 55 mm

Line and Cross Lasers
Outline

	GEO3P	GEO5P	CROSS- POINTER5 SP	360° LINER- POINT HP	GEO SPIDER	SQUARE LINER II	FL 10-CROSS	FL 40-POWER- CROSS SP	FLG 40-POWER- CROSS GREEN SP
ART.-NO.	555030	531500	531500	510000	552000	551000	540100	541500	541550
									
Laser class	2	2	2	2	2	2	2	2	2
Scheme of projected lines									
Vertical lines	-	-	1	1	-	-	1	1	1
Horizontal laser range / angle	-	-	135°	360°	-	-	135°	135°	135°
Laser points	3	5	-	4	-	-	-	-	-
Plumb down beam	yes	yes	yes	-	-	-	-	-	-
Accuracy / 10 m	± 2 mm	± 2 mm	± 3 mm	± 3 mm	± 3 mm	± 3 mm	± 5 mm	± 3 mm	± 3 mm
Dust / water protection	IP 54	IP 54	IP 54	IP 54	IP 52	IP 52	IP 54	IP 54	IP 54
Working range w/o receiver (radius)	30 m	30 m	30 m	20 m	40 m	10 m	10 m	30 m	40 m
Working range with receiver (radius)	-	-	80 m	60 m	-	-	-	-	-
Power supply	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Receiver	-	-	optional	optional	-	-	-	-	-
Page	8	8	9	10	12	13	14	16	17

GEO3X HP	GEO5X-L360 HP	FL 63	FLG 64-GREEN	FL 66-Xtreme SP	FLG 66-XTREME GREEN SP	FL69 ULTRA-LINER HP	FL 70 PREMIUM-LINER SP	FL 1000 HP	
520600	533000	500350	580550	580500	580400	581510	582000	585020	
									
2	2	2	2	2	2	2	2	2	Laser class
									Scheme of projected lines
2	3	4	4	4	4	4	4	4	Vertical lines
150°	360°	130°	130°	130°	130°	360°	360°	360°	Horizontal laser range / angle
-	-	-	-	-	-	8	-	-	Laser points
-	yes	yes	yes	yes	yes	yes	yes	yes	Plumb down beam
± 3 mm	± 2 mm	± 3 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 65	IP 65	IP 54	IP 54	IP 54	Dust / water protection
20 m	20 m	20 m	30 m	30 m	40 m	20 m	30 m	40 m	Working range w/o receiver (radius)
60 m	60 m	-	60 m	80 m	100 m	60 m	200 m	400 m	Working range with receiver (radius)
Alkaline	Li-Ion	Alkaline	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	NiMH/Alkaline	Power supply
optional	optional	optional	optional	optional	optional	inklusive	inklusive	inklusive	Receiver
18	20	22	23	24	25	26	28	29	Page

ROTATING LASERS

MORE PRECISELY:

EASY TO USE, ACCURATE,
ROBUST AND RELIABLE.

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





Our Rotating Lasers 2018

More innovative. More robust. More capable.

» **Here it is: the new generation of geo-FENNEL rotating lasers!**

We have completely redesigned our existing line of rotating lasers. In the interior there is now a new modular system with a much improved drive that is no longer positioned decentrally but rather is located directly at the laser diode. This makes the motor run more quietly. The new device delivers significantly improved performance and is also more robust than previous models. In addition, many control buttons previously located on the device itself have now been integrated into the remote control, greatly facilitating handling in the field. Another improvement not to be undervalued: The new rotating lasers are easier to maintain and to repair than their predecessors. What has not changed is the outstanding performance, the flexibility in application, and the reliability of geo-FENNEL rotating lasers.



FL 100HA Junior



FL 110HA



FL 240 HV



FL 105H



FL 115H



FL 245HV



FLG 240HV-GREEN



FL 260HV



FLG 260HV-GREEN

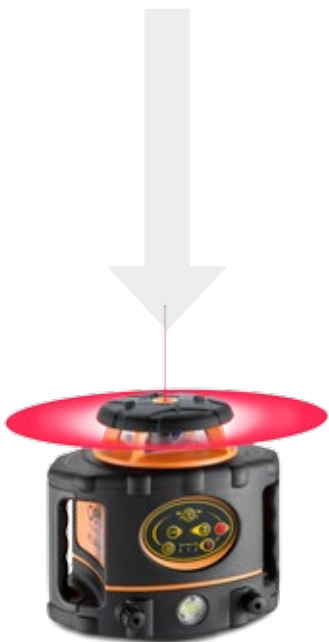


FL 270VA-TRACKING



FLG 245HV-GREEN

FLG 245HV-GREEN TRACKING



FL 265HV



FLG 265HV-GREEN



FL 275HV-TRACKING

FL 190A

Instant self levelling

ROTATING LASER

- » 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 the instant self-levelling and extended range ensure fast and precise results.



SUPPLIED WITH FL 190A

ART.-NO. 292190

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

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 – +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



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



1 Receiver FR 45

TECHNICAL DATA

Self-levelling range	± 3°
Accuracy	± 1,5 mm / 10 m
Working range without receiver Ø	40 m*
Working range with receiver Ø	600 m
Rotating speed (rpm)	200, 400, 600
Power supply	NiMH
Operating time	10 h
Dust/water protection	IP 54
Laser diode / class	635 nm / 2
Temperature range	-10°C to +45°C
Weight (instrument with battery)	1,5 kg
	* depending on the room illumination

FEATURES

- Instant self-levelling
- Horizontal fully automatic self-levelling rotating laser
- Vertical levelling using adjustment screw
- Variable rotating speed
- Permanent 90° beam to zenith
- Rechargeable NiMH batteries with intelligent charger
- Integrated floor/wall mount with adjustment screw

SUPPLIED WITH FL 190A GREEN

ART.-NO. 292195

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





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



Receiver FR 45 **1**

Receiver FR 77-MM **2**

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

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

SUPPLIED WITH FL 105H + 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 + 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



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

ART.-NO. 212001-S02



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

ART.-NO. 212078-S01





FL 115H

The new standard for horizontal laser levels



» **The latest generation premium laser for horizontal applications**

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

» **Improved performance**

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

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

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

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



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





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

ART.-NO. 211001-S02



ROTATING
LASER

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

ART.-NO. 211078-S01



FL 245HV / FLG 245HV-GREEN

The new all-rounder

ROTATING
LASER

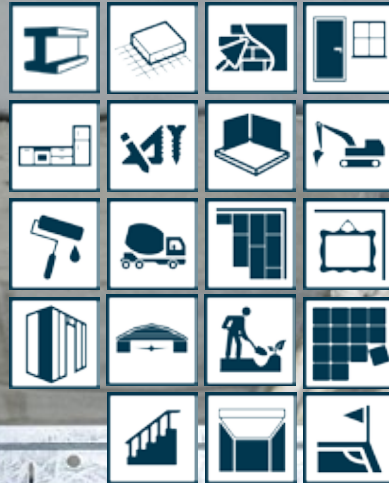


- » **The latest generation laser for the interior professional**
 - New innovative low friction drive mechanism and self-levelling module
 - Accurate, robust and temperature stable
 - Low friction drive for reduced noise generation and increased battery life

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

- » **Improved performance**
 - Robust remote control with 100 m range

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



SUPPLIED WITH
FL 245HV (LC 3R) + FR45

ART.-NO. 244001

SUPPLIED WITH
FL 245HV (LC 2) + FR45

ART.-NO. 244021

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

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

ART.-NO. 244021-S02



FLG 245HV-GREEN
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
FLG 245HV-GREEN + 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



Receiver FR 45 1

Container with FL 245HV 2

Container with
FLG 245HV-GREEN 3

FLG 245HV-GREEN TRACKING

The indoor alignment pro



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

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

» **User-friendly operating concept**

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

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

ROTATING LASER



1



2

Case with FLG 245HV-GREEN Tracking 1

Receiver FR 77-MM Tracking 2

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

ART.-NO. 244701

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

TECHNICAL DATA

FLG 245HV-GREEN TRACKING

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



FL 265HV & FLG 265HV-GREEN

Best in class



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

Supplied with FL 265HV

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

Supplied with
FLG 265HV-GREEN

2	SUPPLIED WITH FLG 265HV (LC 3R) + FR 45	SUPPLIED WITH FLG 265HV (LC 3R) + FR 77-MM
	ART.-NO. 242001	ART.-NO. 242078

green laser

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

FL 275HV-TRACKING

The alignment pro

ROTATING LASER

» **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

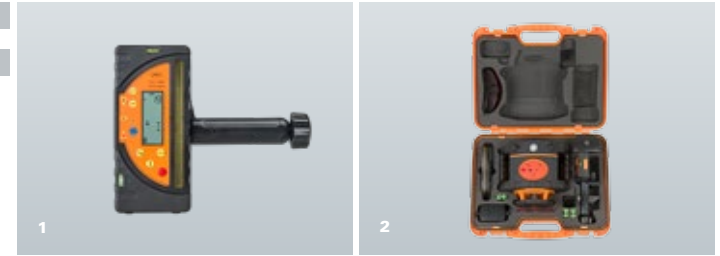
» **Improved performance**

- Robust remote control with 100 m range



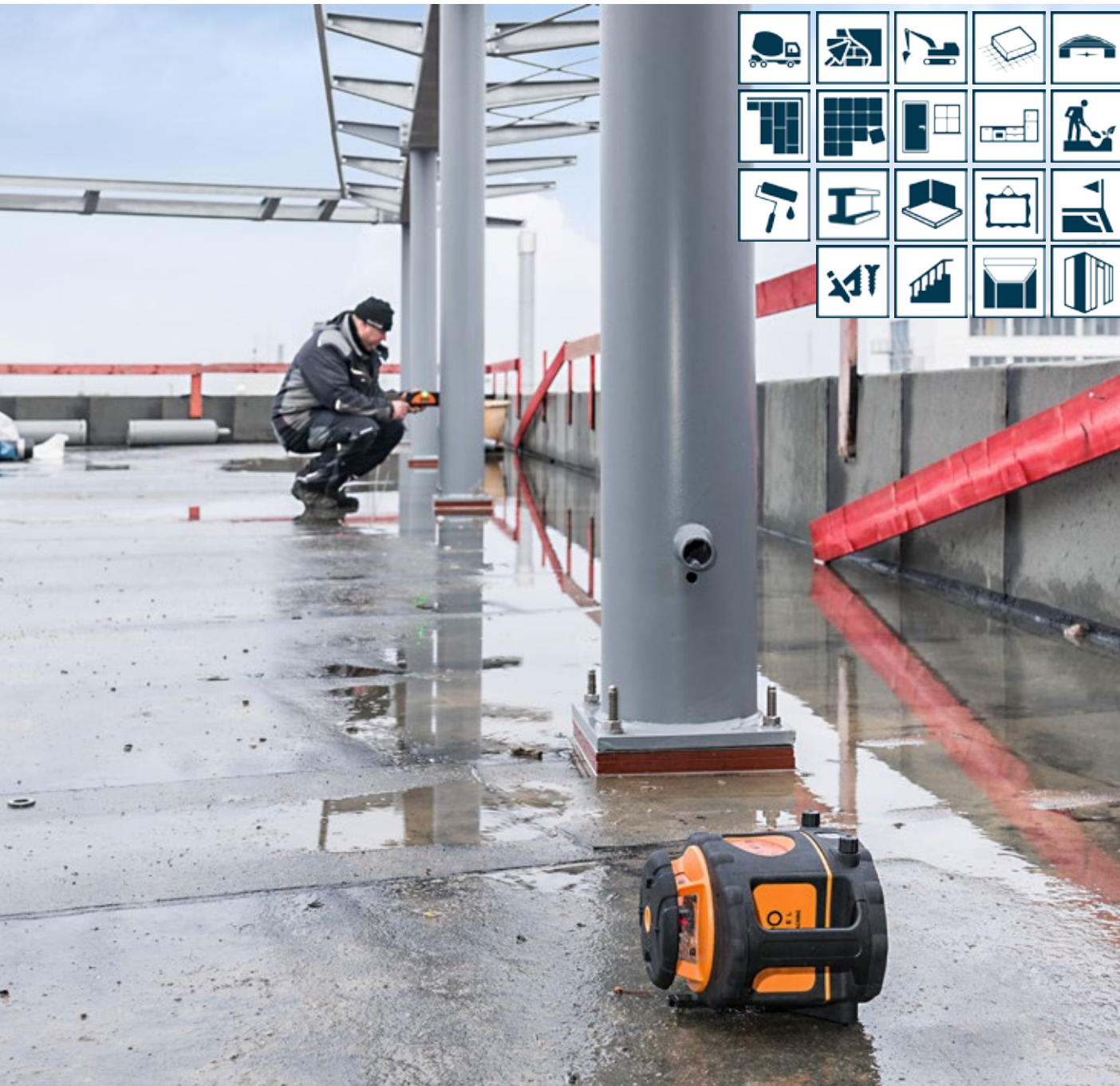
Receiver FR 77-MM Tracking 1

Case with FR 77-MM 2



FEATURES

- TRACKING function for automatic axis alignment horizontal and vertical
- The laser plane is automatically centred to the receiver "on-grade"
- Easy one-button operation of TRACKING function
- Working range of TRACKING function 60 m
- mm-indicating Receiver FR 77-MM TRACKING
- Vertical: in both X and Y axis
- Horizontal: one axis X or Y, opposite axis self-levelled
- Dust / water protection IP 66
- High accuracy of $\pm 0,5 \text{ mm} / 10 \text{ m}$
- Working range 400 m diameter
- Enhanced scanning functions with small increments and a range up to 180°
- Permanent 90° beam for right angles
- Automatic TILT alarm function
- VWS function (Vibration-Wind-Security)
- Auto-shut-off when out of level
- Remote control function on/off: to avoid interference with other remote controls or mobile devices
- Manual slope setting of X and Y axis or auto self-level of opposite axis
- Floor mount with centring mark for accurate set up above a ground point
- Li-Ion battery technology



TECHNICAL DATA FL 275HV TRACKING

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

SUPPLIED WITH

FL 275HV TRACKING + FR 77-MM TRACKING

ART.-NO. 242701

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

FL 150H-G

Horizontal dual grade laser



- » **FL 150H-G combines high performance and easy operation.**
- » High performance
 - Advanced electro mechanical design
 - Temperature stability ensures measuring accuracy
 - High accuracy of ± 0.5 mm / 10 m
 - Grade setting of X and Y axis up to ± 10 % (monitored)
 - TILT and VWS function
 - Li-Ion battery technology
 - 2-Way RF remote control

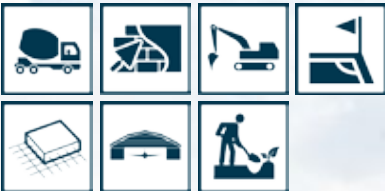
- » Easy operation
 - Digital setting of grade values
 - Monitored grade
 - Reduced number of buttons at instrument



Supplied with 1

Remote control range 80 m 2

TECHNICAL DATA	FL 150H-G (LC 2)	FL 150H-G (LC 3R)	SUPPLIED WITH FL 150H-G (LC 2) + FR 45	SUPPLIED WITH FL 150H-G (LC 2) + FR 77-MM	FEATURES
			ART.-NO. 213020	ART.-NO. 213097	
Self-levelling range	$\pm 6^\circ$	$\pm 6^\circ$			<ul style="list-style-type: none"> · Dual Grade Laser · Horizontal · Digital grade adjustment · Monitored grade · Automatic TILT function · VWS function combined with TILT function · Illuminated display · 2-Way RF remote control · Remote control screen · Li-Ion battery technology · International charger with adapter for car cigarette lighter socket
Accuracy	$\pm 0,5$ mm / 10 m	$\pm 0,5$ mm / 10 m			
Working range with receiver FR 45 \varnothing	800 m	1200 m			
Working range with receiver FR 77-MM (optional) \varnothing	400 m	600 m			
Laser class	2	3R			
Horizontal slope setting					
X-Axis	$\pm 10.000\%$	$\pm 10.000\%$			
Y-Axis	$\pm 10.000\%$	$\pm 10.000\%$			
X and Y-Axis	$\Sigma \pm 14$ %	$\Sigma \pm 14$ %			
Rotating speed	600 U/min	600 U/min			
Operating time	30 h	30 h			
Power supply	Li-Ion	Li-Ion			
	Alkaline batteries (optional)	Alkaline batteries (optional)			
RF Remote control range	80 m	80 m			
Temperature range	-20 °C – +50 °C	-20 °C – +50 °C			
Dust / water protection	IP 65	IP 65			
Weight (instrument only)	2,2 kg	2,2 kg			
			SUPPLIED WITH FL 150H-G (LC 3R) + FR 45	SUPPLIED WITH FL 150H-G (LC 3R) + FR 77-MM	
			ART.-NO. 213000	ART.-NO. 213077	
			<ul style="list-style-type: none"> · Receiver FR 45 with clamp for levelling staff · 2-Way RF remote control · Li-Ion battery · International charger · Battery compartment for alkaline batteries · Carrying case 	<ul style="list-style-type: none"> · Receiver FR 77-MM with clamp for levelling staff · 2-Way RF remote control · Li-Ion battery · International charger · Battery compartment for alkaline batteries · Carrying case 	



SET
 FL 150H-G (LC 2) + FR 45 + FS 50-M + TN 15
 ART.-NO. 213020-S02

SET
 FL 150H-G (LC 2) + FR 77-MM + FS 50-M + TN 15
 ART.-NO. 213097-S01

ROTATING LASER

FL 505HV-G

The versatile dual grade laser



- » **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

- 1 Including receiver FR 77-MM
- 2 With 360° horizontal fine adjustment bracket
- 3 With 9-channel 2-way RF remote control
- 4 Complete kit supplied in container



SUPPLIED WITH

FL 505HV-G + FR 77-MM

ART.-NO. 231025

- Receiver FR 77-MM with clamp
- 2-Way RF Remote ctrl
- 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

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	800 m
Scanning w/o receiver	60 m*
Rotating w/o receiver Ø	60 m*
Laser diode / Laser class	2
Scanning ranges	0°, 10°, 45°, 90°, 180°
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 – +50 °C
Dust / water protection	IP 66
Weight (instrument only)	3.85 kg



FL 510HV-G TRACKING

The ideal outdoor laser

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

With Receiver FR 77-MM Tracking **1**

Remote Control **2**

Complete kit supplied in container **3**



TECHNICAL DATA	FL 510HV-G TRACKING	FEATURES	SUPPLIED WITH FL 510HV-G TRACKING
			ART.-NO. 231700
Self-levelling range	± 8°	<ul style="list-style-type: none"> · Dual Axis Laser · Horizontal and vertical · Digital grade adjustment · Monitored grade (also in tracking mode) · TILT function · VWS function · Tracking function horizontal and vertical · Zonal control · 90° beam to zenith · Illuminated display · 2-way RF remote control · Manual function · Operation with rechargeable Li-Ion or alkaline batteries · Dust / water protection IP 66 	<ul style="list-style-type: none"> · Receiver FR 77-MM Tracking with clamps for levelling staff and scaffold · 2-way RF remote control · Li-Ion batteries and charger · Vertical mount · Telescopic viewfinder · 360° horizontal fine adjustment bracket · Container
Accuracy horizontal	± 0.5 mm / 10 m		
Accuracy vertical	± 1 mm / 10 m		
Working range with receiver FR 77-MM Tracking Ø	800 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

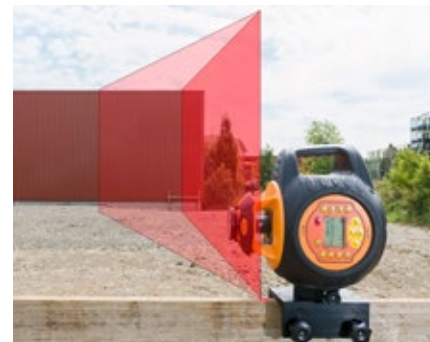
» **Tracking functions:**

- 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
- Indication of grade value in % after completion of tracking process shown on the instrument and remote control display. Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections – increases site safety
- 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
- **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)
 - Zonal control with electronic beam screen (masking)
 - Fully functional 8-channel 2-way RF remote control
 - Li-Ion battery technology



Rotating Lasers Outline

	FL 190A	FLG 190A GREEN	FL 105H	FL 115H	FL 245HV	FLG 245HV-GREEN
ART.-NO.	292190	292195	212001	211001	244021	244501
						
Laser class	2	2	2	2	2	2
Horizontal levelling	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic
Vertical levelling	manuel	manuel	-	-	fully automatic	fully automatic
Accuracy / 10 m	H ± 1,5 mm	H ± 1,5 mm	± 1,0 mm	± 0,5 mm	H ± 1,0 mm	H ± 1,0 mm
Dust / water protection	IP 54	IP 54	IP 65	IP 66	IP 54	IP 54
Working range w/o receiver Ø	30 m	40 m	40 m	60 m	40 m	60 m
Working range with receiver FR 45 Ø	400 m	600 m	600 m	1200 m	500 m	1000 m
Working range with receiver FR 77-MM Ø	-	-	300 m	900 m	-	-
rpm	200, 400, 600	200, 400, 600	800	800	300, 800	300, 800
Tracking function	-	-	-	-	-	-
TILT function	-	-	yes	yes	yes	yes
VWS function	-	-	yes	yes	-	-
Slope function of both axis X and Y	-	-	-	± 5° (9 %)	± 5° (9 %)	± 5° (9 %)
Slope setting	-	-	-	manuel	manuel	manuel
Plumb up / down beam	yes	yes	-	-	yes	yes
Power supply	NiMH	NiMH	NiMH	Li-Ion	NiMH	NiMH
Receiver, remote control, rechargeable battery, charger	inclusive, without remote	inclusive, without remote	inclusive, without remote	inclusive	inclusive	inclusive
Page	38	39	40	42	44	44

FLG 245HV-GREEN TRACKING	FL 265HV	FLG 265HV-GREEN	FL 275HV-TRACKING	FL 150H-G	FL 505HV-G	FL 510HV-G TRACKING	ART.-NO.
244701	242021	242501	242701	213020	231020	231700	
							
2	2	2	2	2	2	2	Laser class
fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	fully automatic	Horizontal levelling
fully automatic	fully automatic	fully automatic	fully automatic	-	fully automatic	fully automatic	Vertical levelling
H ± 1,0 mm	H ± 0,5 mm	H ± 0,5 mm	± 0,5 mm	± 0,5 mm	H ± 0,5 mm	H ± 0,5 mm	Accuracy / 10 m
IP 54	IP 66	IP 66	IP 66	IP 65	IP 66	IP 66	Dust / water protection
60 m	40 m	60 m	40 m	40 m	40 m	40 m	Working range w/o receiver Ø
-	800 m	1000 m	-	800 m	900 m	-	Working range with receiver FR 45 Ø
1000 m	400 m	1200 m	400 m	400 m	400 m	400 m	Working range with receiver FR 77-MM Ø
300, 800	300, 800	300, 800	300, 800	600	300,600,1100	300,600,1100	rpm
yes	-	-	yes	-	-	yes	Tracking function
yes	yes	yes	yes	yes	yes	yes	TILT function
-	yes	yes	yes	yes	yes	yes	VWS function
± 5° (9 %)	± 5° (9 %)	± 5° (9 %)	± 5° (9 %)	10.000 %	10.000 %	10.000 %	Slope function of both axis X and Y
manuel	manuel	manuel	manuel	digital / controled	digital / controled	digital / controled	Slope setting
yes	yes	yes	yes	-	yes	yes	Plumb up / down beam
NiMH	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Power supply
inclusive	inclusive	inclusive	inclusive	inclusive	inclusive	inclusive	Receiver, remote control, rechargeable battery, charger
46	48	48	50	52	54	56	Page

PIPE LASER

ROBUST, WATER RESISTANT,
POWERFUL.

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





FKL-55 and FKL-55 GREEN

Straight and advanced

» FKL-55



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

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

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

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

» FKL-55 Green



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



» SUPPLIED WITH

Fittings

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

Application in pipes DN 150 w/o legs

FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> · 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 	<ul style="list-style-type: none"> · Target frame with target DN 150–300 · Container · Pipe Laser · IR remote control · Leg set DN 500 · Leg set DN 400 · Leg set DN 300 · Leg set DN 250 · Leg set DN 200 · Adapter for 3-leg set up · Charger · Battery case for alkaline batteries · Target DN 400–500



Universal Mount for FKL-55 / FKL-55 Green



UNIVERSAL MOUNT
ART.-NO. 455100
<ul style="list-style-type: none"> · 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

» **NEW:** 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 45 Receiver for Rotating Lasers

» **NEW:** 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.



» FR 45 for Rotating Lasers

FEATURES FR 45

ART.-NO. 252000

- 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

TECHNICAL DATA

FR 45

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

FR 77-MM Laser Receiver



» **NEW: For red and green laser.**

With digital level indication in millimeters.

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

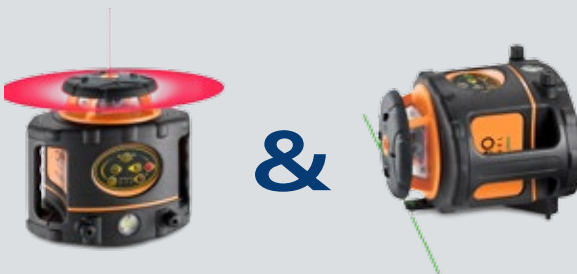


Illuminated display 1

Detail Offset 2

Special mount 3

UNIVERSAL ACCESSORIES FOR RED AND GREEN ROTATING LASERS



TECHNICAL DATA	FR 77-MM	FEATURES
3-step accuracy	± 2 / 5 / 9 mm	<ul style="list-style-type: none"> · For rotating lasers using a red laser beam · Extra-long receiving window · mm-Indication of difference between laserplane and "0" level · Segments of display indication increase / decrease proportionally · "0"-Position can be defined (Offset) · Display illumination · Robust clamp · Special mount for divers connection e. g. at the scaffold
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 (0SET) 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 67	
Dimensions	170 x 77 x 32 mm	
Weight	0.5 kg	
*depending on the laser class		



SUPPLIED WITH

ART.-NO. 257100

- 4 x AA Alkaline
- Clamp
- Bracket

FR-DIST 30

Receiver with integrated Laser distance meter for Rotating Lasers

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

Applications

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

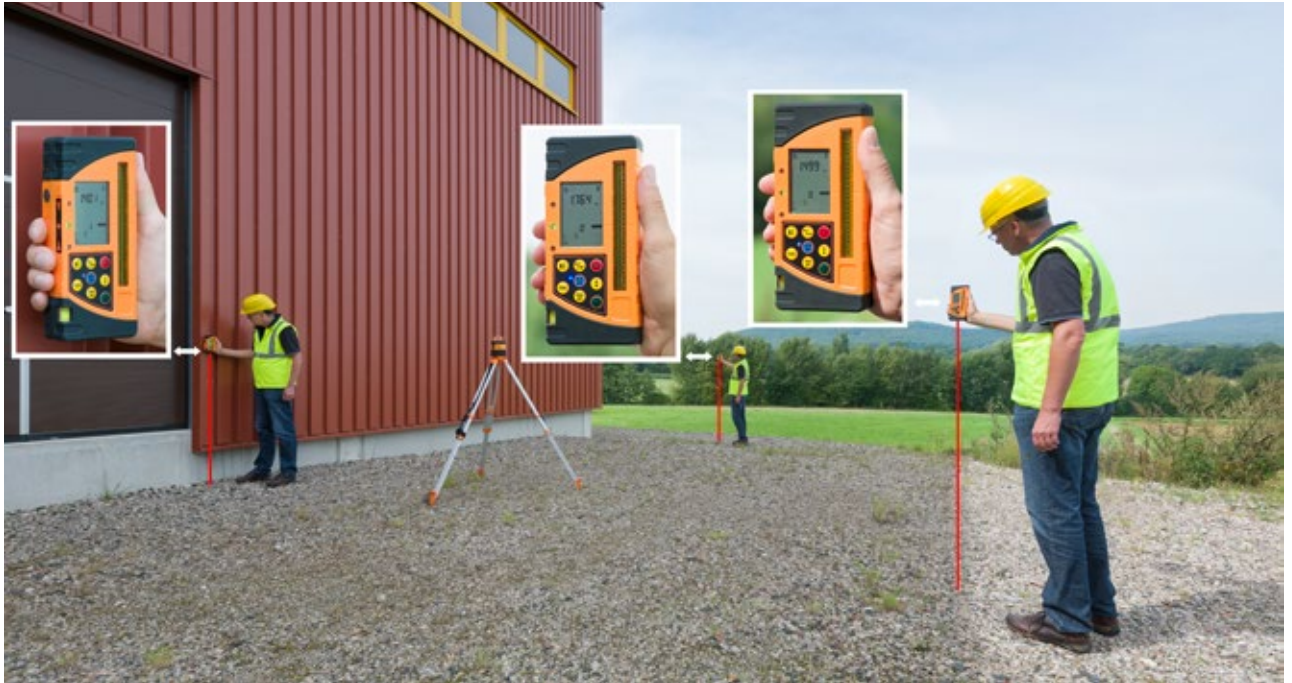


mm indication **1**

Measurement of area **2**



TECHNICAL DATA	FR-DIST 30	FEATURES
LASER RECIEVER		<ul style="list-style-type: none"> · 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
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	
GENERAL		Measuring functions (LASER DISTANCE METER) <ul style="list-style-type: none"> · Single / Permanent measurement · Area / Volume · Pythagoras 1, height (2 points) · Pythagoras 2, overall height (3 points)
Length of receiving window	100 mm	SUPPLIED WITH FR-DIST 30 ART.-NO. 257300 <ul style="list-style-type: none"> · 3 x AA Alkaline battery · Clamp for levelling staff
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	



RECEIVERS FOR LASERS

FMR 600 Receiver for Rotating Lasers

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



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

Set FMR 700-M/C Machine Control Receiver Set

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



» Clamp



» Magnet



» FRP 707



RECEIVERS FOR LASERS

TECHNICAL DATA	FMR 700-M/C UND 706-M/C	FEATURES	SUPPLIED WITH FMR 700-M/C UND 706-M/C
Accuracy fine	± 2 mm – ± 10 mm	<ul style="list-style-type: none"> Length of receiving window: 25 cm Connect to the machine with screw clamps or with strong magnets (both supplied in the kit) Detects beam from rotating laser levels of any brand Remote display 	Machine control receiver, built-in rechargeable battery, charger, 12/24V-battery cable, remote display with connection cable, hard case Also supplied separately: <ul style="list-style-type: none"> Machine control receiver FMR 706-M/C, built-in battery, charger, 12/24V battery cable, hard case Remote display with connection cable
Accuracy coarse	± 5 mm – ± 23 mm		
Rechargeable batteries	7,2 V NIMH 2500 mAh		
Operating time	40 h		
Charging time	15 h		
Temperature range	-20°C - +50°C		
Dimensions	376 x 180 x 49mm		
Weight	3,1 kg		

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

FMR 800-M/C SET Machine Control Receiver

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

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



RECEIVERS FOR LASERS

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

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



Clamp 1

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



FRD 807 Remote Display

1 Suction pad attachment



TECHNICAL DATA

FRD 807

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.





N 32-Set Automatic Level



TECHNICAL DATA	N32	FEATURES
ART.-NO. 400 GON	200532	<ul style="list-style-type: none"> Robust metal housing Supplied in carton comprising N32, 5 m levelling staff and tripod for convenient storage and delivery
ART.-NO. 360°	200533	
Mean error 1 km double levelling	± 2 mm	SUPPLIED WITH N32-SET (400 GON & 360°) <ul style="list-style-type: none"> N32 level with carrying case Aluminium tripod 5 m levelling staff Set carton
Telescope magnification	24x	
Objective diameter	36 mm	
Shortest focussing distance	0,3 m	
Horizontal circle	400 gon / 360°	
Weight	1,5 kg	

FN 24 / FN 32 Automatic Level



- » Practical high performance combined with a modern design – the new auto levels FN 24 and FN 32.
- » Automatic Levels suitable for all construction sites for levelling and alignment.



SET FN 32 (400 GON) + TRIPOD FS 20 + BS 15-0	SET FN 24 (400 GON) + TRIPOD FS 20 + BS 15-0
ART.-NO. 220432-S01	ART.-NO. 220424-S01

TECHNICAL DATA	FN 24	FN 32	FEATURES
ART.-NO. 400 GON	220424	220432	
ART.-NO. 360°	220324	220332	
Mean error for 1 km double levelling	± 2 mm	± 1 mm	<ul style="list-style-type: none"> · Metal housing · Bubble reading mirror · Target device (Optical sight) for quick alignment to a target or levelling staff · Modern design · Dust / water protection IP 54
Telescope magnification	24 x	32 x	
Objective diameter	35 mm	35 mm	
Shortest focusing distance	0.3 m	0.3 m	
Working range of compensator	± 12'	± 12'	
Levelling accuracy	± 0,5"	± 0,5"	
Circular bubble	8' / 2 mm	8' / 2 mm	
Horizontal circle	400 gon / 360°	400 gon / 360°	
Dust / water protection	IP 54	IP 54	
Weight (instrument only)	1.2 kg	1.2 kg	

FAL Automatic Level



- » Rugged design for site use. Precision optics in a metal housing and a large range to suit all applications. Also available as set with tripod and levelling staff.

SET FAL 32 (400 GON) + TRIPOD FS 20 + BS 15-0	SET FAL 24 (400 GON) + TRIPOD FS 20 + BS 15-0
ART.-NO. 232400-S02	ART.-NO. 234400-S02

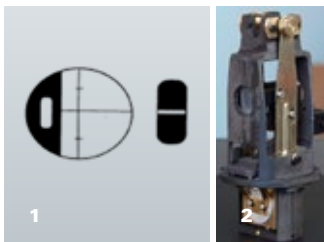
TECHNICAL DATA	FAL 24	FAL 32	FEATURES
ART.-NO. 400 GON	234400	232400	
ART.-NO. 360°	234360	232360	
Mean error for 1 km double levelling	2.0 mm	1.0 mm	<ul style="list-style-type: none"> · Metal housing · Mirror for easy reading of bubble · Suitable for both flat and domed head tripods
Telescope magnification	24 x	32 x	
Objective diameter	38 mm	38 mm	
Shortest focusing distance	0.3 m	0.3 m	
Working range of compensator	± 15'	± 15'	
Levelling accuracy	± 0.5"	± 0.5"	
Circular bubble	8' / 2 mm	8' / 2 mm	
Horizontal circle	400 gon / 360°	400 gon / 360°	
Dust / water protection	IP 54	IP 54	
Weight	1.5 kg	1.5 kg	

FEN 132 Engineers Automatic Level

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



- 1 By reflecting an index mark into the eyepiece (pendulum position of the compensator) compensation errors are eliminated to increase accuracy
- 2 Extremely robust compensator



**SUPPLIED WITH
FEN 132**

ART.-NO. 210233

- Container
- Adjustment pin
- Screw driver
- Dust brush
- Plumb bob

FLP 100 Laser Zenith Plummet

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



**SUPPLIED WITH
FLP 100**

ART.-NO. 310000

- Set of alkaline batteries
- Target plate
- Container

TECHNICAL DATA	FEN 132	FEATURES
Magnification	26 x	<ul style="list-style-type: none"> · Easy to use with two laser plummets (up and down) · Laser dot visible up to ≥ 120 m · High accuracy for precision work
Clear objective aperture	36 mm	
Shortest focusing distance	0.4 m	
Laser Pointer		
Laser class / Wave length	2M / 635 nm	
Spot size \varnothing	3 mm / 80 m	
Max. visible distance (day)	≥ 120 m	
Max. visible distance (night)	≥ 250 m	
Deviation to optical axis	$\leq 3''$	
Accuracy	$\pm 2,5$ mm / 100 m	
Optical plummet		
Laser class / Wave length	1 / 650 nm	
Accuracy	± 1 mm / 1,5 m	
Plate level	20" / 2 mm	
Power supply	2 x AA Alkaline	
Temperature range	-10 °C – +50 °C	
Dust / water protection	IP 54	
Weight	2.8 kg	

TECHNICAL DATA	FEN 132	FEATURES
Magnification	32 x	<ul style="list-style-type: none"> · Robust and temperature insensitive · Highly accurate and free moving vertical axis · Separate horizontal clamp · Accurate tangent screw movement and focusing drive without backlash · Optical sighting device · Excellent image quality · Service-friendly due to simple construction
Clear objective aperture	45 mm	
Field of view	1°	
Shortest focusing distance	2 m	
Mean error per 1 km double levelling using index mark	< 1 mm	
Without using index mark	± 2 mm	
Multiplication constant	100	
Working range of compensator	$\pm 15'$	
Levelling accuracy compensator	2"	
Circular bubble	8' / 2 mm	
Horizontal circle	360°	
Dust / water protection	IP 54	
Weight	3.4 kg	
Dimensions	280 x 160 x 140 mm	
Temperature range	-25 °C – +50 °C	

FET 500 Construction Theodolite

» A versatile entry level optical theodolite



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

TECHNICAL DATA	FET 500	FEATURES
Magnification	20 x	<ul style="list-style-type: none"> · Built-in optical plummet · Circular bubble, plate level · Telescope vial · Circle orientation device · Available in 400 gon or 360°
Objective aperture	30 mm	
Shortest focusing distance	1.2 m	
Direct reading	0.1 gon	
Estimation	10 mgon	
Temperature range	-40 °C – +50 °C	
Weight	2.0 kg	

FET 220 Electronic theodolite – easy to use

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

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



SUPPLIED WITH FET 220	
ART.-NO. 313000	
<ul style="list-style-type: none"> · Tribrach · Rechargeable battery · Charger · Battery compartment for alkaline batteries · Container 	

TECHNICAL DATA	FEN 132	FEATURES
Magnification	30x	<ul style="list-style-type: none"> · 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
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	

SURVEYING INSTRUMENTS

NEW CATALOGUE 2018

You know us as a great partner for surveying equipment. Starting in spring 2018, you can find all of our surveying equipment in a separate catalog, along with GPS-controlled systems for surveying work for construction, land registry, industry, and engineering.

We have robust, compact units that are designed for use in challenging conditions. Until the catalog comes out, you can find everything you need in the field of surveying equipment on our website:
www.geo-fennel.com





- » GPS systems from geo-FENNEL. Robust and compact and specially designed for use in demanding environments.
- » Electronic Theodolite. Always exact and right at the centre of the action.
- » Total stations

MEASURING INSTRUMENTS

WITH AN EYE TO THE FUTURE:
PRECISION MEETS INNOVATION.

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





EasyWheel M20 Measuring Wheel

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



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

TECHNICAL DATA

ART-NO. 120

Accuracy	± 0,1%
Measuring distance	0 - 9.999,9 m
Wheel circumference	1 Meter
Extended size	1000 (L) x 140 mm (B)
Folded size	510 (L) x 140 mm (B)
Weight	1,8 kg

SUPPLIED WITH M20

- Measuring Wheel
- Carrying case with shoulder strap

FEATURES

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

MEASURING INSTRUMENTS

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





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

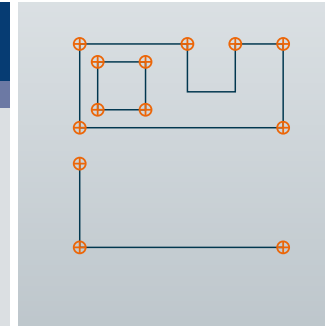
ART.-NO. 6135

- 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

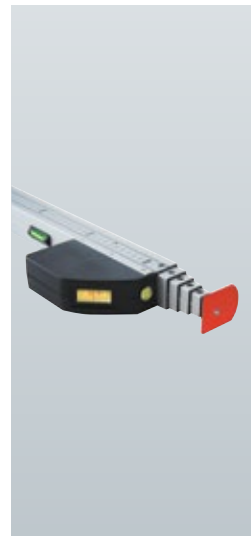


LASER EASYFIX 5 M

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

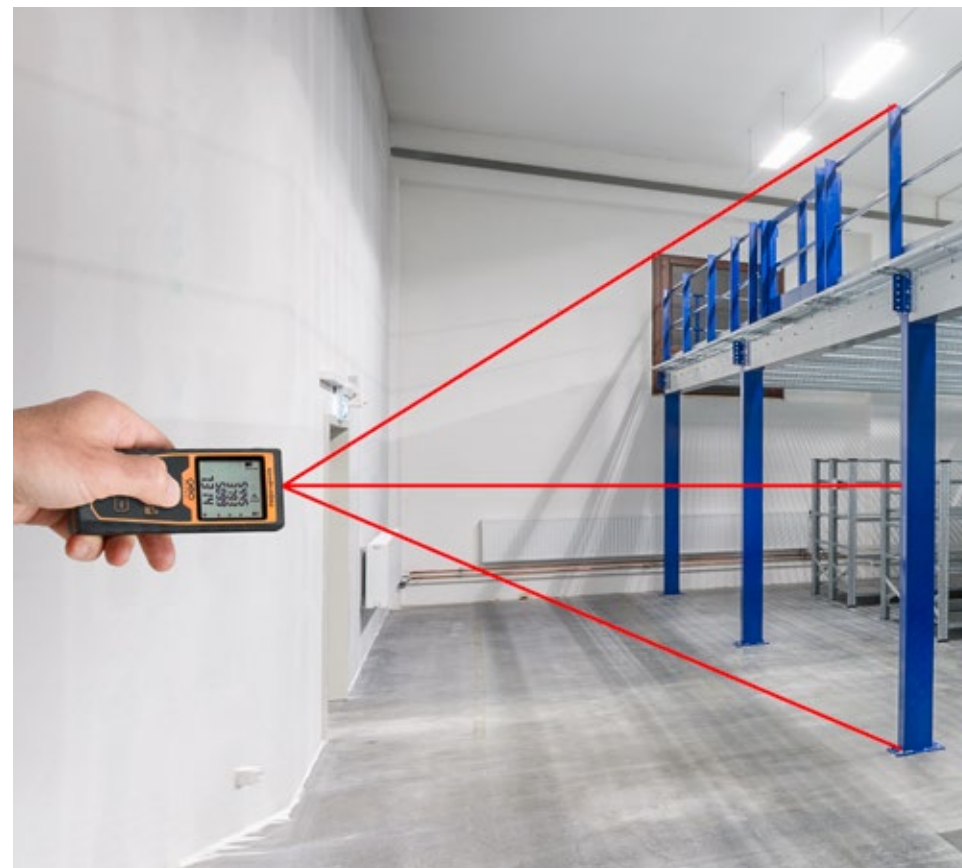
ART.-NO. 410 3 m, erect

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

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 4line display
- Rubberised housing for protection and enhanced grip



MEASURING
INSTRUMENTS

**SUPPLIED WITH
GEODIST® 50**

ART.-NO. 300150

- Holster
- Batteries

TECHNICAL DATA	GEODIST® 50	FEATURES
Accuracy	± 2,0 mm	<ul style="list-style-type: none"> · 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 to 40°C	
Power supply	2 x AAA alkaline batteries	
Weight (with batteries)	120g	

GeoDist® 30 Laser Distance Meter

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



SUPPLIED WITH GEODIST® 30
ART.-NO. 300130
<ul style="list-style-type: none"> · Holster · Batteries



FEATURES

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

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

DISTO D1

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



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

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

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

MEASURING INSTRUMENTS

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

DISTO D2

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



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

DISTO X310

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



TECHNICAL DATA	DISTO X310	FEATURES	SUPPLIED WITH
			ART.-NO. 300012
Distance	0.05 – 80 m	<ul style="list-style-type: none"> · Minimum / maximum · Permanent measurement · Plus / minus · Area / volume · Room function summary · Height measurement (Pythagoras) · Measurement despite obstructions · Stake-out function · 360° TILT sensor · mm, ft, inch · Multi-functional endpiece 	<ul style="list-style-type: none"> · Holster · Hand loop · Batteries
Accuracy	± 1.0 mm		
Dust / water protection	IP 65		
Weight	155 g		
Laser class	2		
			Range and accuracy test according to DIN ISO 16331-1

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

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

DISTO D510



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

TECHNICAL DATA	DISTO D510	FEATURES	SUPPLIED WITH
			ART.-NO. 300007
Distance	0.05 – 200 m	<ul style="list-style-type: none"> · Minimum / maximum · Permanent measurement · Plus / minus · Area / volume · Room function summary · Indirect height measurement (Pythagoras) · Measurement despite obstructions · Measurement of facade areas · 360° TILT sensor · Bluetooth® smart 	<ul style="list-style-type: none"> · Holster · Hand loop · Batteries <p>Range and accuracy test according to DIN ISO 16331-1</p>
Accuracy	± 1.0 mm		
Dust / water protection	IP 65		
Weight	198 g		
Laser class	2		

DISTO D810 touch



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

TECHNICAL DATA	DISTO D810	FEATURES	SUPPLIED WITH
			ART.-NO. 300009
Distance	0.05–200 m	<ul style="list-style-type: none"> · Minimum / Maximum · Permanent measurement · Plus / minus · Area / volume · Room function summary · Indirect height measurement (Pythagoras) · Measurements despite obstructions · Measurement of facade areas · Bluetooth® · 360° TILT sensor for measurement of any slope (even overhead) 	<ul style="list-style-type: none"> · Holster · Hand loop · Batteries <p>Range and accuracy test according to DIN ISO 16331-1</p>
Accuracy	± 1.0 mm		
Dust / water protection	IP 54		
Weight	238 g		
Laser class	2		

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

Electronic Slope Measurers

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

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

S-Digit mini +

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



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

S-Digit multi +

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



1 Easy reading even from above and integrated laser beam

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



1

S-Digit 60 +

- » Robust slope measurer. Length 60 cm. Incorporated laser beam
- » NEW: Magnetic base



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

TECHNICAL DATA	S-DIGIT 60 +	FEATURES
Working range	4 x 90°	<ul style="list-style-type: none"> · 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 – +45 °C	
Weight (incl. Batteries)	0.86 kg	
Size	600 x 60 x 32 mm	
SUPPLIED WITH S-DIGIT 60 +		
ART.-NO. 620010		
<ul style="list-style-type: none"> · Padded bag · Batteries 		



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

- » Electronic inclinometers for everyday use



TECHNICAL DATA	S-DIGIT 60WL +	S-DIGIT 120WL +
ART.-NO.	640010	640110
Working range	4 x 90°	4 x 90°
Resolution	0,1° / 0,1 %	0,1° / 0,1 %
Accuracy	0° and 90° = ± 0,1° 1° and 89° = ± 0,2°	0° and 90° = ± 0,1° 1° and 89° = ± 0,2°
Measuring units / Display	°, %, mm/m, in/ft	°, %, mm/m, in/ft
Power supply	3 x AAA Alkaline	3 x AAA Alkaline
Operating time	60 h	60 h
Temperature range	-10 °C – +45 °C	-10 °C – +45 °C
Weight	0,93 kg	1,2 kg
Dimensions	600 x 60 x 27 mm	120 x 60 x 27 mm

SUPPLIED WITH S-DIGIT 60WL + / 120WL +	FEATURES
<ul style="list-style-type: none"> · Padded bag · Batteries 	<ul style="list-style-type: none"> · Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90° · Inclination direction indication · Zero position re-set at any position · Automatic digit inversion for overhead measurements · 180° rotatable display · 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 – + 50 °C
Power supply	2 x AAA batteries
Operation time	100 h
Length unfolded A-Digit 50	991 mm
Length unfolded A-Digit 75	1410 mm
Weight A-Digit 50 (A-Digit 75)	0.9 kg (1.1 kg)

A-DIGIT 50

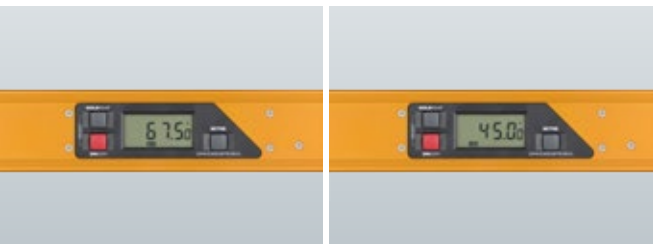
ART-NO. 650050

- Padded bag
- Batteries

A-DIGIT 75

ART-NO. 650075

- Padded bag
- Batteries



Multi-Digit Pro + All-in-one

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



TECHNICAL DATA

MULTI-DIGIT PRO +

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

SUPPLIED WITH MULTI-DIGIT PRO +

ART-NO. 600010

- Padded bag
- Batteries

FEATURES

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



Spirit Level M-Level ECO

Bamboo spirit level – strong, durable, tough and sustainable

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



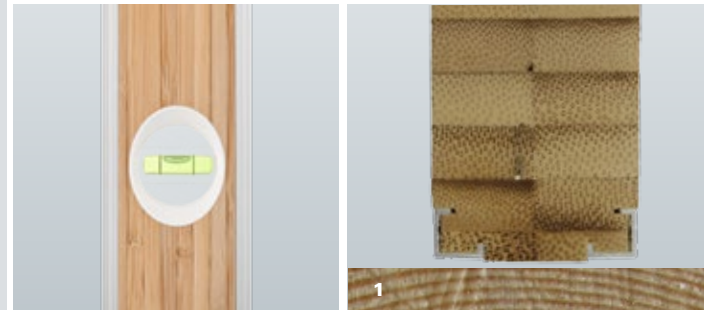
1 Measurements are done via contact of Bamboo surface to measurement area. Metallic rails are only stabilizing the spirit level and do not get in contact with the measurement area.



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

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

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



MEASURING INSTRUMENTS

Spirit Level M-Level TPZ

Aluminium die-cast spirit level

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



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

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

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

MEASURING INSTRUMENTS

ENVIROMENTAL INSTRUMENTS

THE DEGREE OF PROFESSIONALISM:
EXTREMELY HIGH.

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





FVE 100 Video Borescope



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



» 17 mm

» 9 mm

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

Optional accessories: Gooseneck probes of 1 m and 2 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 – + 50 °C
Humidity range	15 % – 85 % RH
Dimensions	240 x 160 x 100 mm
Weight with probe	0.584 kg

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

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

FVE 150 Video Borescope



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

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

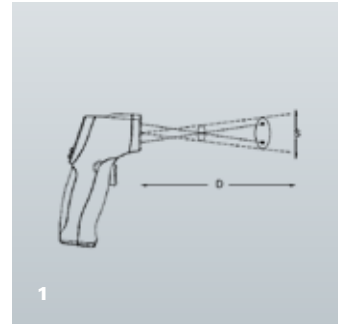


TECHNICAL DATA	FVE 150	FEATURES	SUPPLIED WITH FVE 150
			ART.-NO. 800710
Camera head		<ul style="list-style-type: none"> · Water proof camera head and probe · 1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas · Camera head with LED lighting · Immediate transfer of the colour image to the large LCD display · 180° image rotation at the press of a button · Internal memory or SD-card to store images and video sequences · 4 GB SD-card included (supports up to 8 GB) · Date and time indication on the display · Transmission of video clips / images onto television or PC for editing or documentation · Multi-language menu (DE, EN, FR, ES, IT, FI) · Accessories: see FVE 100 	<ul style="list-style-type: none"> · Video borescope · 1 m flexible gooseneck probe · TV cable · USB cable · Charger · Magnet · Hook · Mirror · 4 GB SD-card · Container
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 – + 50 °C		
Humidity range	15 % – 85 % RH		
Dimensions	240 x 160 x 100 mm		
Weight with probe	0.584 kg		



FIRT 550-Pocket and FIRT 800-Pocket Infrared Thermometer

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



FEATURES

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

The dual laser dot to focus the target 1

TECHNICAL DATA	FIRT 550-POCKET	FIRT 800-POCKET
D(istance):S(pot)	12:1	10:1
Temperature range	-50 °C – +550 °C	-35 °C – +800 °C
Ø measuring spot at 100 cm	80 mm	100 mm
Emissivity	adjustable 0.1 – 1.0	adjustable: 0,1 - 1,0
Laser pointer	yes, dual	yes, dual
Auto data HOLD	yes	yes
Illuminated display	yes	yes
Max, Min	Max only	yes
High and low alarm	yes	yes
Power supply	9 V battery	9 V battery
Response time	< 1 sec	< 1 sec
Resolution display	0.1 °C	0,1°C
Accuracy	± 1 %	± 1 %
Laser class	2	2
Weight	0.178 kg	0,178 kg
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm

SUPPLIED WITH FIRT 550-POCKET

- ART-NO. 800001
- Case and battery

SUPPLIED WITH FIRT 800-POCKET

ART-NO. 800002

- Case and battery



FIRT 1000 DataVision Infrared Thermometer

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

TECHNICAL DATA	FIRT 1000 DATAVISION
D(istance):S(pot)	50:1
Temperature range	-50 °C – +1000 °C
Ø measuring spot at 100 cm	20 mm
Emissivity	adjustable 0.10 – 1.0
Laser pointer	yes, dual
Auto data HOLD	yes
Illuminated display	yes
Max, Min, DIF, AVG record	yes
High and low alarm	yes
Power supply	3.7 V Li-Ion battery
Response time	< 150 ms
Resolution	0.1 °C – 1000 °C
	1 °C over 1000 °C
Temperature range Type-K probe	-50 °C – +1370 °C
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C
Accuracy (TK) (-50 °C – +1370 °C)	± 0.5 % ± 1.5 °C
Laser class	2
Weight	0.45 kg
Dimensions	205 x 62 x 155 mm

FEATURES
· For non-contact temperature measurement with laser dot
· Short response time of 150 ms and an accuracy of ± 1,0 %
· 2.2" TFT colour LC display
· Dual laser pointer for better targeting
· Permanent measuring
· Compatible with all standard connector Type-K thermocouples
· Easy transmission of measurements to PC via USB
· Memory socket for Micro-SD Cards
· Integrated camera for images (JPEG) and video (AVI)
· Date /Time function
· Measurement of air humidity and ambient temperature
· Determination of dewpoint

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

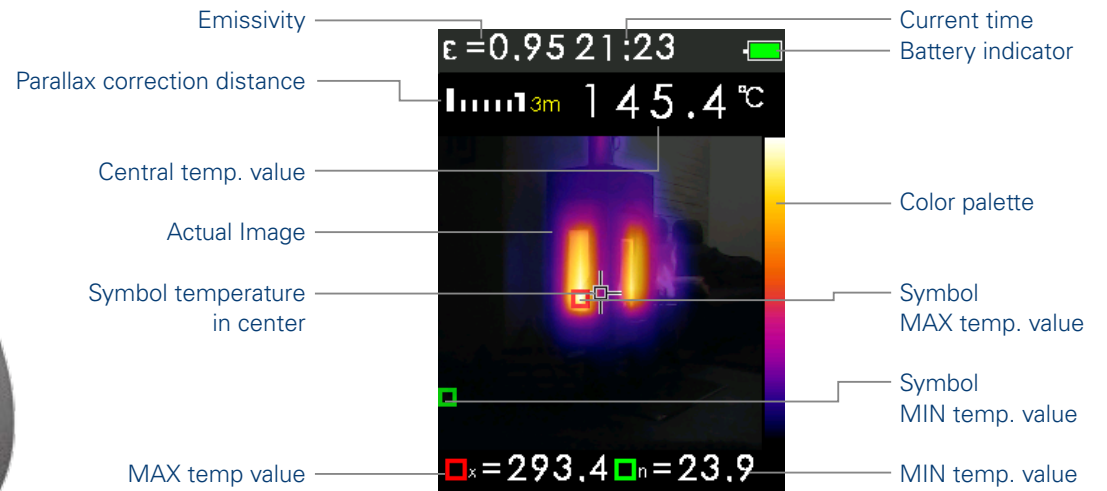
- 1 Display with simultaneous indication of:
 - Date / time
 - Ambient temperature
 - Dewpoint temperature
 - Temperature of the object measured
 - Minimum temperature
 - Maximum temperature
 - Temperature difference
 - Average temperature
 - Wet bulb temperature
 - Ambient humidity
 - Emissivity
 -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

FTI 300

Thermal imaging camera

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

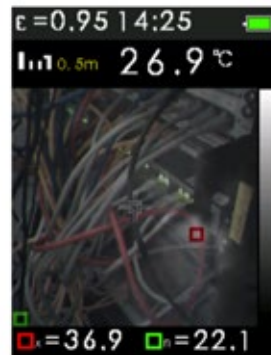
» **Trades and tasks:** Heating and ventilating installations, building insulation (heat loss), plumbing, electric, electronic, electro-mechanical and mechanical engineering, routine maintenance
Easy to locate hot and cold spots on electrical and mechanical installations.



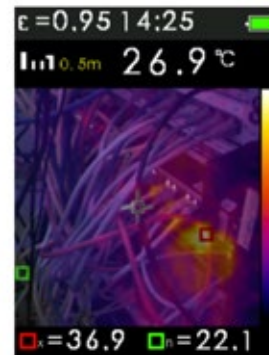
FEATURES	SUPPLIED WITH FTI 300
<ul style="list-style-type: none"> · Automatic indication of hot / cold spot with configurable alarm function · PIP-function for blending of visible and infrared image (0-100%) for optimized orientation in the picture · 6 colour palettes · Memory for 6000 images / data transfer to PC for subsequent analysis 	<p style="background-color: #003366; color: white; padding: 2px;">ART.-NO. 800040</p> <ul style="list-style-type: none"> · Li-Ion battery & charger · USB-cable for data transfer and charging · Hard case



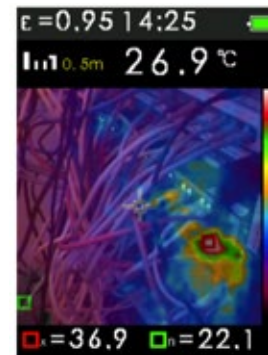
» grey (black)



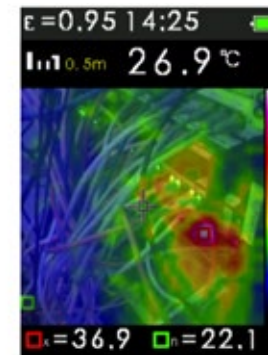
» grey (white)



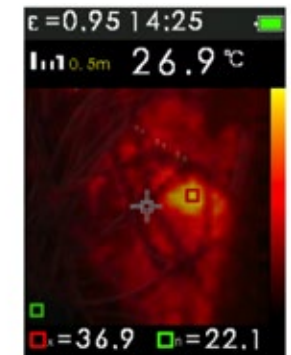
» Metal



» Rainbow



» High Contrast



» Hot Metal



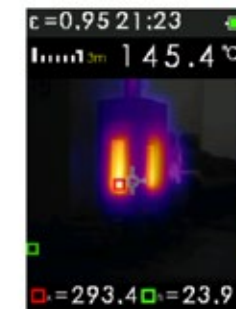
» 0%



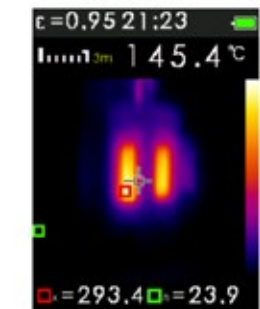
» 25%



» 50%



» 75%



» 100%

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

FIRT 1600 Data Infrared Thermometer



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

FHT 70 DataLog Temperature and Humidity Data Logger



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

TECHNICAL DATA	FIRT 1600 DATA	FEATURES	SUPPLIED WITH
			ART.-NO. 800020
D(istance):S(pot)	50:1	<ul style="list-style-type: none"> · For non-contact temperature measurement with laser dot · 150 ms fast sampling with 1 % accuracy · High temperature range · Built-in dual laser pointers for accurate targeting · Permanent measuring · Compatible with all standard connector Type-K thermocouples · USB interface · Memory for 99 measurements · Easy transmission of data to PC via USB interface 	<ul style="list-style-type: none"> · Battery · USB cable · Mini tripod · Type-K temperature probe · Case
Temperature range	-50 °C – +1600 °C		
Ø measuring spot at 100 cm	20 mm		
Emissivity	adjustable 0.10–1.0		
Laser pointer	yes, dual		
Auto data HOLD	yes		
Illuminated display	yes		
Max, Min, DIF, AVG record	yes		
Power supply	9 V battery		
Response time	Less than 150 ms		
Resolution	0.1 °C – 1000 °C		
	1 °C over 1000 °C		
Temperature range Type-K probe	-50 °C – +1370 °C		
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C		
Accuracy (TK) (-50 °C – +1370 °C)	± 1.5 % of reading + 3 °C		
Laser class	2		
Weight	0.3 kg		
Dimensions	204 x 155 x 52 mm		

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

FHM 10 Moisture Meter



» Pocket-size moisture meter for fast and convenient measurement of moisture content.

» **Trades and tasks:** Building and construction: plaster, gypsum, concrete and mortar; wood construction: sawn timber; general: firewood, wood, cardboard, paper.

TECHNICAL DATA	FHT 60	FHT 100
ART.-NO.	800100	800110
Temperature range	-20 °C – +60 °C	-30 °C – +100 °C
Humidity range	0 % – 100 % RH	0 % – 100 % RH
Fast response time	yes	yes
Illuminated display	yes	yes
Max HOLD	yes	yes
Data HOLD	yes	yes
Dewpoint temperature	no	-30 °C – +100 °C
Wet bulb temperature	no	0 °C – +80 °C
Accuracies:		
Humidity	± 3.5 % RH	± 2 % RH
Temperature	± 2 °C	± 0.5 °C
Dewpoint	–	± 0.5 °C
Wet bulb	–	± 0.5 °C

FEATURES
· Fast measurement of relative humidity and temperature
FHT 100
· Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature)
SUPPLIED WITH
FHT 60 & FHT 100
· Case
· Battery

SUPPLIED WITH
FHM 10
ART.-NO. 800310
· CR2032 batteries

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		

FHM 20 Moisture Meter



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

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

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

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

* Average adjustment for European wood at 20°C

FEATURES

- External moisture measurement probe
- External temperature probe: at measurement with moisture and temperature probe the moisture measurement is carried out with automatic temperature compensation. This leads to a higher accuracy
- 8 mm measuring pins (replaceable)
- Protective cap with integrated calibration check
- Battery indicator
- Automatic power-off (adjustable time)

SUPPLIED WITH

ART.-NO. 800320

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

1 Moisture and temperature probe



1

FFM 100 Moisture Detector



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

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

FEATURES
Quick measurement of humidity in building materials without destruction of the surface
· Indication of minimum / maximum values
· Sensor type: metal spheroid

SUPPLIED WITH
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 – +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.



FGD 1 Gas Leak Detector

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

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

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

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

SUPPLIED WITH
ART.-NO. 800470
· Batteries

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

FCT 1 Data Coating Thickness Tester



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

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



» Accessories for calibration

SUPPLIED WITH

ART.-NO. 800460

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

PROPERTIES

- Internal memory for 80 readings per group
- Easy data transfer to PC by USB
- PC software
- Measures insulating coat-ings 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 (± 3 % +0.039 mils)	0 – 850 µm (± 3 % +1.5 µm) 0 – 33.46 mils (± 3 % +0.059 mils)
	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)
Resolution 0 – 50 µm	0.1 µm	0.1 µm
Resolution 0 – 1.968 mils	0.001 mils	0.001 mils
Diameter of minimum area	7 mm	5 mm
Basic thickness of material	0.5 mm	0.3 mm
Working temperature	0 °C – +40 °C	0 °C – +40 °C
Working relative humidity	20 % ~ 90 %	20 % ~ 90 %
Power supply	2 x AAA Alkaline	2 x AAA Alkaline
Size	113.5 x 54 x 27 mm	113.5 x 54 x 27 mm
Weight	110 g	110 g

FLM 400 Data Luxmeter



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

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

SUPPLIED WITH

ART.-NO. 800510

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

TECHNICAL DATA FLM 400 DATA

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

FEATURES

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

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

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



TECHNICAL DATA	FT 1300-1	FT 1300-2	SUPPLIED WITH FT 1300-1 & FT 1300-2
ART.-NO.	800400	800410	
Scanfunction	1 measurement	2 measurements simultaneously or temperature difference	<ul style="list-style-type: none"> Flexible wire probe TP-300 Set of batteries Case
Sampling rate	2.5 x per second	2.5 x per second	
Accuracy	± 0,5 % / ± 1 °C	± 0,5 % / ± 1 °C	FEATURES <ul style="list-style-type: none"> Indication of maximum value (MAX) Data HOLD function Large display (45 mm) with illumination
Display resolution	0.1 °C / 1 °C	0.1 °C / 1 °C	
Temperature range	-50 °C – +1300 °C	-50 °C – +1300 °C	
Measuring units	°C / °F / K	°C / °F / K	
Dimensions	162 x 76 x 39 mm	162 x 76 x 39 mm	
Weight	0.21 kg	0.21 kg	
Power supply	Alkaline batteries	Alkaline batteries	

FT 1000-Pocket Digital Thermometer

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



TECHNICAL DATA	FT 1000-POCKET
Temperature range	-20 °C – +1000 °C
Accuracy	± 3 %
HOLD function	yes
Automatic shut-off	yes
Battery status indicator	yes
Dimensions	117 x 65 x 24 mm
Weight	0.16 kg
Power supply	Alkaline batteries

FEATURES	SUPPLIED WITH
<ul style="list-style-type: none"> Handy thermometer with immersion probe Pocket-size, light weight, easy to operate 	ART.-NO. 800420 <ul style="list-style-type: none"> Set of batteries Incorporated all-purpose probe

FMM 5 5-in-1 Digital Multimeter



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



SUPPLIED WITH

ART-NO. 800600

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

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

* numerical

Accessories for Environmental Measuring Equipment

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



ACCESSORIES

OUR INVITATION:
ALWAYS NEW CHALLENGES TO
CONQUER.

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





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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	WH 2
ART.-NO. 290600	ART.-NO. 290610
<ul style="list-style-type: none"> · 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 	<ul style="list-style-type: none"> · Same as WH 1 but all metal. · Especially solid · Platform size 150 x 95 mm for fixing larger instruments · Suitable for all geo-FENNEL-lasers

Grade Mount



GRADE MOUNT

ART.-NO. 290700

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

ADAPTER FOR S-DIGIT MINI



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

Allows higher accuracy to be achieved.

ADAPTER FOR S-DIGIT MINI +

ART.-NO. 290750



» Example

SH2 Scaffold clamp holder



SH2 SCAFFOLD CLAMP HOLDER

ART.-NO. 320610

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

Adapter 5814



ADAPTER 5814

ART.-NO. 290550

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

Laser glasses



LASER GLASSES RED

ART.-NO. 253000

LASER GLASSES GREEN

ART.-NO. 253001

- Laser intensive glasses for better visibility of laser beam

Magnetic Target LS 307



MAGNETIC TARGET LS 307 RED

ART.-NO. 290500

MAGNETIC TARGET LS 307 GREEN

ART.-NO. 290501

- Magnetic Target with cm/inch graduation



Adapter FCA



» FCA-L



» FCA-E

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

Like this structural facings can be mounted exactly parallel.

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

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



FS 13 (2.95 m) Elevating Tripod

FS 13

ART.-NO. 304000

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

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



FS 14 (1.61m) Camera Tripod

FS 14

ART.-NO. 301000

- Rotating head
- 57–161 cm
- 1.4 kg

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



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



» FS 10

» FS 12

FS 10

ART.-NO. 302000

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

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

FS 12

ART.-NO. 303000

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

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

FS 30-XS (3.00 m) Elevating Tripod



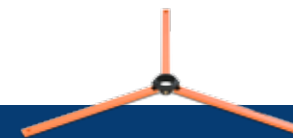
FS 30-XS

ART.-NO. 165

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

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

Tripod Floor Stand



TRIPOD FLOOR STAND

ART.-NO. 170

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

FS 40 Aluminium Tripod



FS 40

ART.-NO. 150

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

- Adjustable range of centre column 30 cm
- Quick clamp system
- Incl. shoulder carrying strap

FS 30-S Elevating Tripod



FS 30-S

ART.-NO. 155

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

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

FS 30-M Elevating Tripod



FS 30-M

ART.-NO. 158

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

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

FS 30-L Elevating Tripod



FS 30-L

ART.-NO. 156

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

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

FS 50-M (2.20 m) Elevating Tripod

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



FS 50-M

ART.-NO. 164

- Column / Flat head
- 80–220 cm
- 7.2 kg

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

FS 50-L (2.90 m) Elevating Tripod



FS 50-L

ART.-NO. 166

- Column / Flat head
- 114–290 cm
- 8.6 kg

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

Builders' Tripod BT Aluminium tripod



BUILDERS TRIPOD BT

ART.-NO. 161

- Flat head
- 92 – 147 cm
- 3.2 kg

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

FS 24 FS 24 W/S Wooden Tripod



FS 24

ART.-NO. 154

- Flat head
- 105 – 170 cm
- 6.5 kg

FS 24 W/S

ART.-NO. 154 W/S

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

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

FS 30-XL (3.80 m) Elevating Tripod



FS 30-XL

ART.-NO. 159

- Column / Flat head
- 166 – 380 cm
- 15.6 kg

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

FS 20 FS 20-D Aluminium Tripods



FS 20

ART.-NO. 151

- Flathead
- 105 – 165 cm
- 3,5 kg

FS 20-D

ART.-NO. 157

- Domed head
- 105 – 165 cm
- 3,5 kg

Aluminium Tripod FS 20

- For light measuring instruments such as automatic levels
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 123 mm

Aluminium Tripod FS 20-D

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

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



FS 23

ART.-NO. 152

- Flat head
- 105 – 170 cm
- 5.1 kg

FS 23-D (DOMED HEAD)

ART.-NO. 153

FS 23 W/S (FLATHEAD)

ART.-NO. 152 W/S

Aluminium Tripods FS 23

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

Aluminium Tripod FS 23-D

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

Aluminiumstativ FS 23 W/S

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

TN14



TN 14

ART.-NO. 484

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

TN15



TN 15

ART.-NO. 485

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

TN 20-Kombi



TN 20-KOMBI

ART.-NO. 482

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

Optional accessories

ROD LEVEL LR7 FORTN 14/15/15-0

ART.-NO. 370

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

CASE FORTN 14/15/15-0

ART.-NO. 480

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



RPT 1 Ranging Pole Tripod



RPT 1

ART.-NO. 820

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

RP 2 Metal Ranging Pole

6X RP 2

ART.-NO. 800

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

BS 15-0

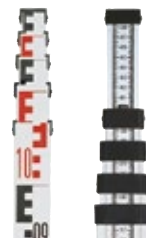


BS 15-0

ART.-NO. 486 BS

- A quality levelling staff for laser levels
- Front face cm-E graduation
 - Rear face graduated in mm with "0" beginning at the bottom

TN 15-0



TN 15-0

ART.-NO. 486

- High quality levelling staff similar to TN 15, except:
- Rear face graduated in mm with "0" beginning at the bottom

Marking Spray



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



MARKING SPRAY

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

COLOURS

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

- Content 500 ml
- Sales packing 12 cans per carton

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



Marking Wheel

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



MARKING WHEEL

ART.-NO. 940

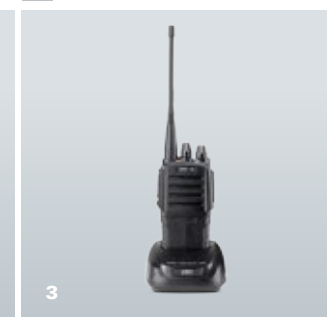
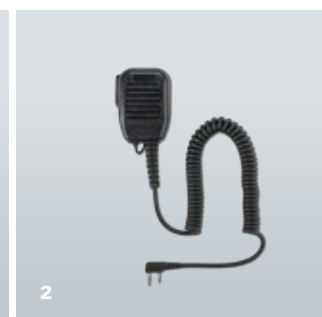
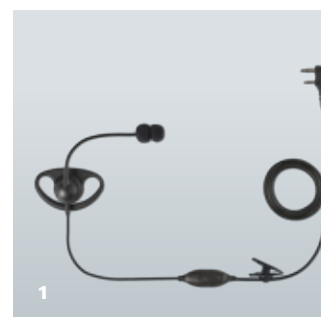
- Length 83 cm
- Weight 0.6 kg

F6 Two-way Radio

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



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



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

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

SUPPLIED WITH

ART.-NO. 870000

- Two-way radio
- Rechargeable battery
- Charger
- Belt clip
- Hand strip

FMD 60 Metal Detector



- » **Easy to use metal detector.**
- Designed for the detection and localisation of manhole covers, site marks, pipes etc.
 - Perfect for site security by detecting hidden metallic objects.



FEATURES
HEADPHONE FH 1 (OPTIONAL)

ART.-NO. 800810

- For the use of FMD 60 in loud surroundings
- Padded earcups and headband



TECHNICAL DATA	FMD 60	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	SUPPLIED WITH
Dust / water protection measuring disc	IP 67	
Weight	2.0 kg	ART.-NO. 800800
Weight	3.3 kg with case and box	
		· 8 x AA alkaline batteries
		· Carrying bag

Mixer FM 1010 1010 W

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



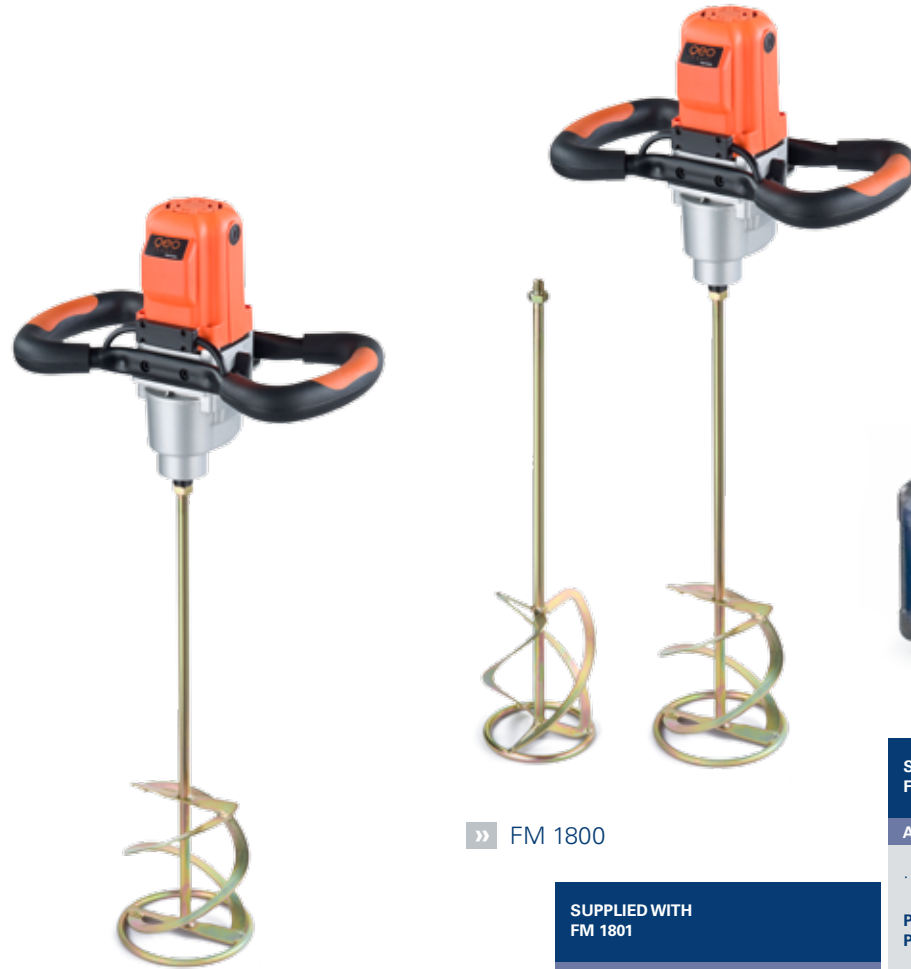
**SUPPLIED WITH
PADDLE H2-120 MM**

ART.-NO. M800500

- e. g. for mortar, concrete, paint
- paddle diameter 120 mm x length 600 mm
- stirring capacity 10–25 kg

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

Mixer FM 1800 and FM 1801 1800 W



» FM 1801

» FM 1800



**SUPPLIED WITH
FM 1800**

ART.-NO. M800507

- Carrying case

**SUPPLIED WITH
FM 1801**

ART.-NO. M800508

PADDLE H2-140 MM

PADDLE H3-160 MM

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

Paddles for mixers

FM 1010 and FM 1800

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



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

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



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

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



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

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



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

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



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

QUALITY & SERVICE

INFORMATION AND SUPPORT







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

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

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

Our extensive experience has convinced customers, for many years.

Our quality standard

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

*DKD = German Calibration Office



Our product range

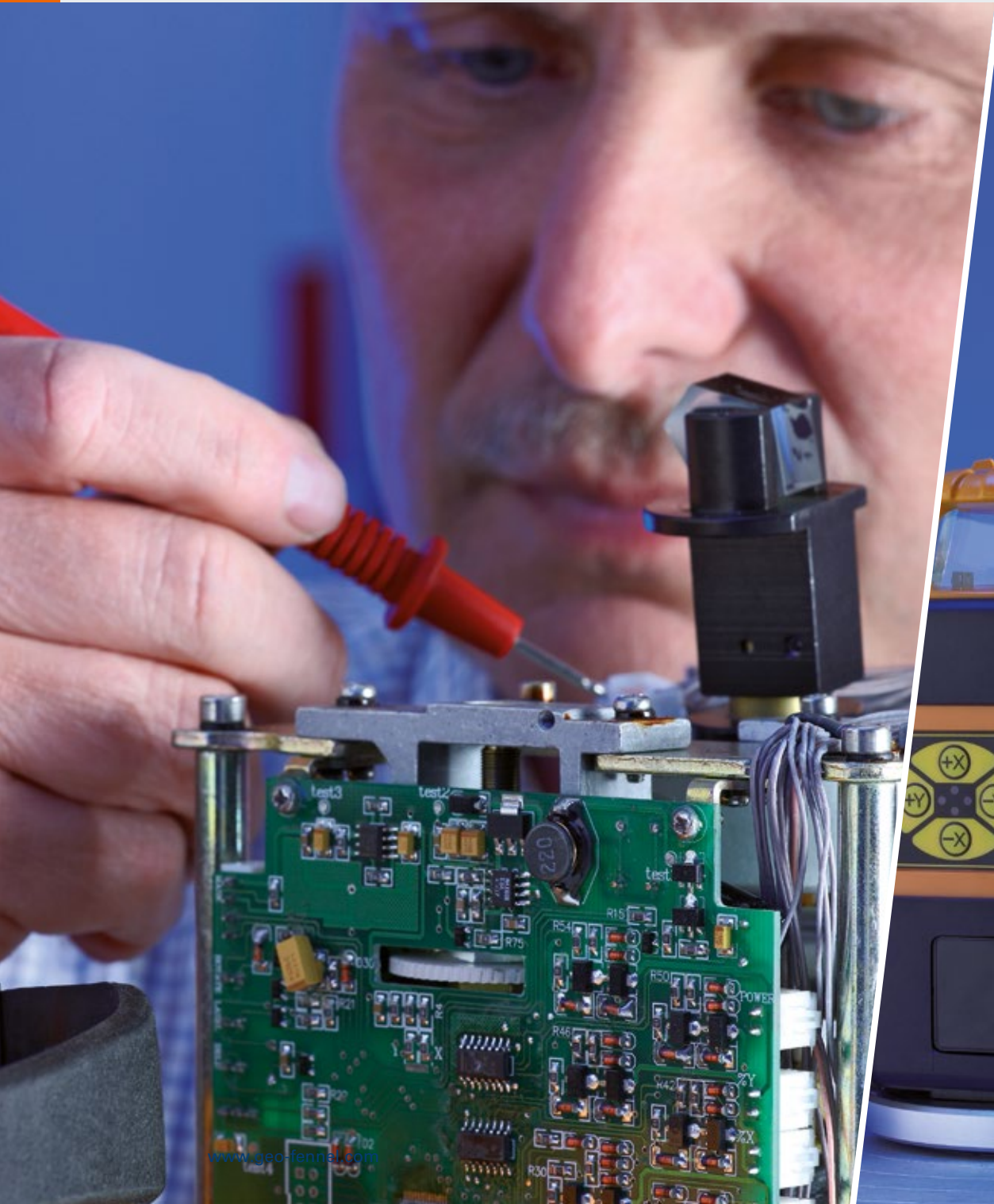
» Our product range includes:

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

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

Ancillary Products
 Measuring Instruments
 Environmental Measuring Equipment





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

Service is our pledge.

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

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



Guaranteed First Class.

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

We offer 2 years guarantee on all products.

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

Quick and easy.

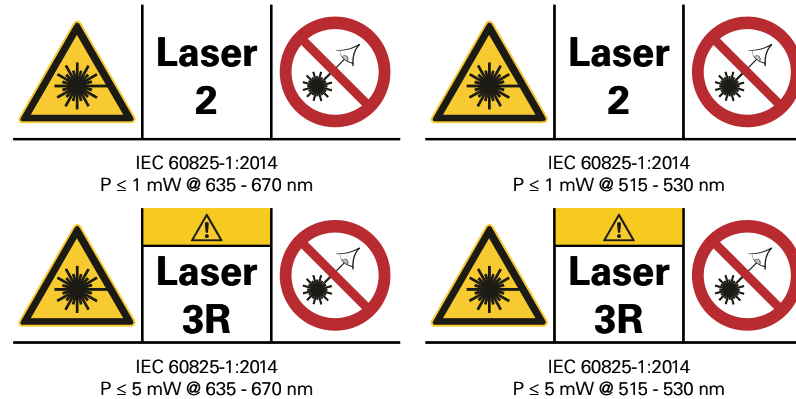


Laser classification according to DIN EN 60825-1:2014

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

Their laser class is specified in our technical data.

Please refer to the latest version.



» **Instruments with laser class 2**

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

» **Instruments with laser class 3R**

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

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

GEO-FENNEL CROSS LINE LASERS

The complete range is classified in laser class 2 and offered in 4 visibility classes:

Standard	e. g. Square Liner II	Working range visibility 10 m
HP (High Power)	e. g. Geo5x-L360 HP	Working range visibility 20 m
SP (Selection PRO)	e. g. FL 66-Xtreme SP	Working range visibility 30 m
SP (Selection PRO) – Green	e. g. FLG 66-Xtreme Green SP	Working range visibility 40 m

GEO-FENNEL ROTATING LASERS

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

GEO-FENNEL PIPE LASERS

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

geo-FENNEL – Product functions

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



» **Automatic TILT Function**

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



» **Vibration-Wind-Security (VWS)**

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



» **Remote control function**

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



» **Zonal control**

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



» **Li-Ion battery technology**

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

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

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

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

IP Protection class according to DIN EN 60529

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

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



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

geo-FENNEL F6 Two-way Radio

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

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

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

- | | |
|---------------------------|---------------------------|
| Channel 1 = 446,00625 MHz | Channel 5 = 446,05625 MHz |
| Channel 2 = 446,01875 MHz | Channel 6 = 446,06875 MHz |
| Channel 3 = 446,03125 MHz | Channel 7 = 446,08125 MHz |
| Channel 4 = 446,04375 MHz | Channel 8 = 446,09375 MHz |

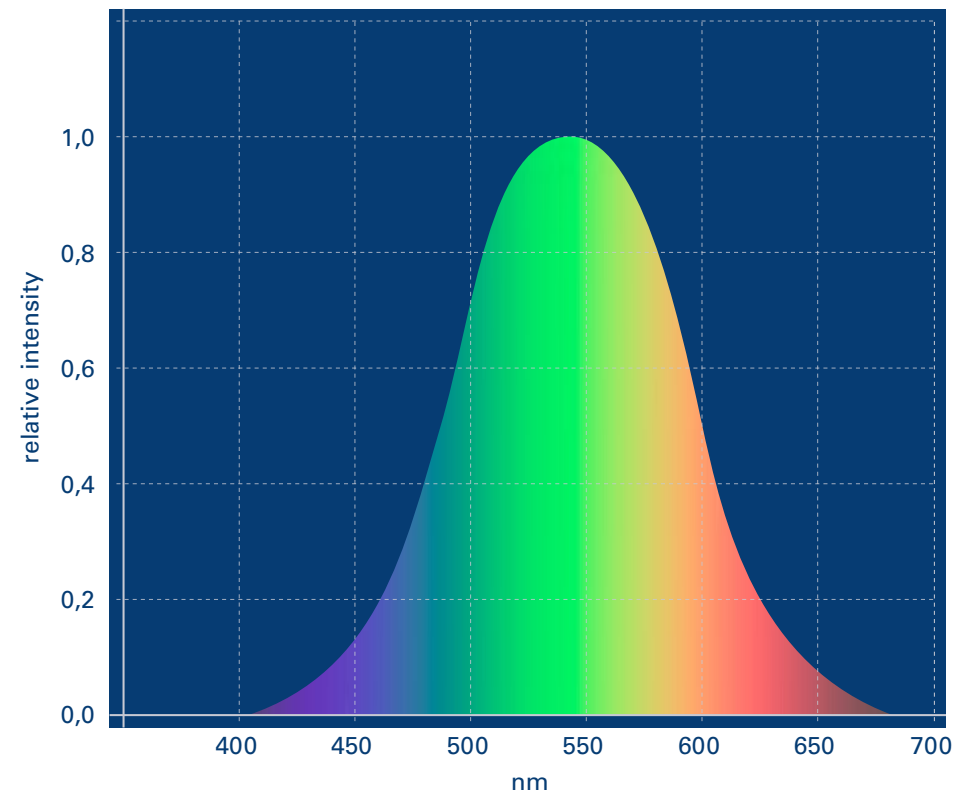
Lasers with red or green laser diode

- » The human eye can see the different wavelengths (measuring unit 'nm') of the visible colour spectrum in different intensities. The optimum is at 555 nm. Green light is situated in the middle of this range and can be perceived much higher compared to red light.
- » Therefore green lasers have benefits when used without a receiver. The visibility is much better when working in a bright environment, over long distances or on dark surfaces.

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

geo-FENNEL have now introduced an innovation in the field of rotating lasers: The rotating lasers FLG 245HV-Green and FLG 265HV-Green are equipped with advanced laser diode technology offering the following advantages:

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





maxi Sales Display

MAXI

ART.-NO. 111000

Dimensions

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

- Made of metal with a large glass door
- Wooden presentation area for 6 products, which can be secured underneath with a 5/8" tripod screw
- 1 small glass display (left), lockable
- 1 shelf in the bottom cabinet which is also lockable
- On left and right side tripods, levelling rods and floor-to-ceiling pillar KS 3 can be positioned

mini Sales Display

MINI

ART.-NO. 110000

Dimensions

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

- Metal Housing
- On wooden presentation area 3 products can be fixed with 5/8" tripod screw
- Display with slideable glass door for arrangement of further products
- Lockable for security against theft
- Can be integrated in existing Tegometall shelving system

basic Sales Display

BASIC

ART.-NO. 110050

Dimensions

- Width 50 cm
- Depth 25 cm
- Height 30 cm

- Display out of laminated wood



Presentation Systems

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



» Generalist



» Generalist



» Dry mortarless construction



Precision in measuring. Presence at exhibitions.

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



» Poster DIN A1



» Label for authorized dealers
Size: 150 x 108 mm

» Car sticker
Size: 100 x 114 mm

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





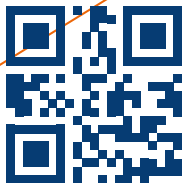
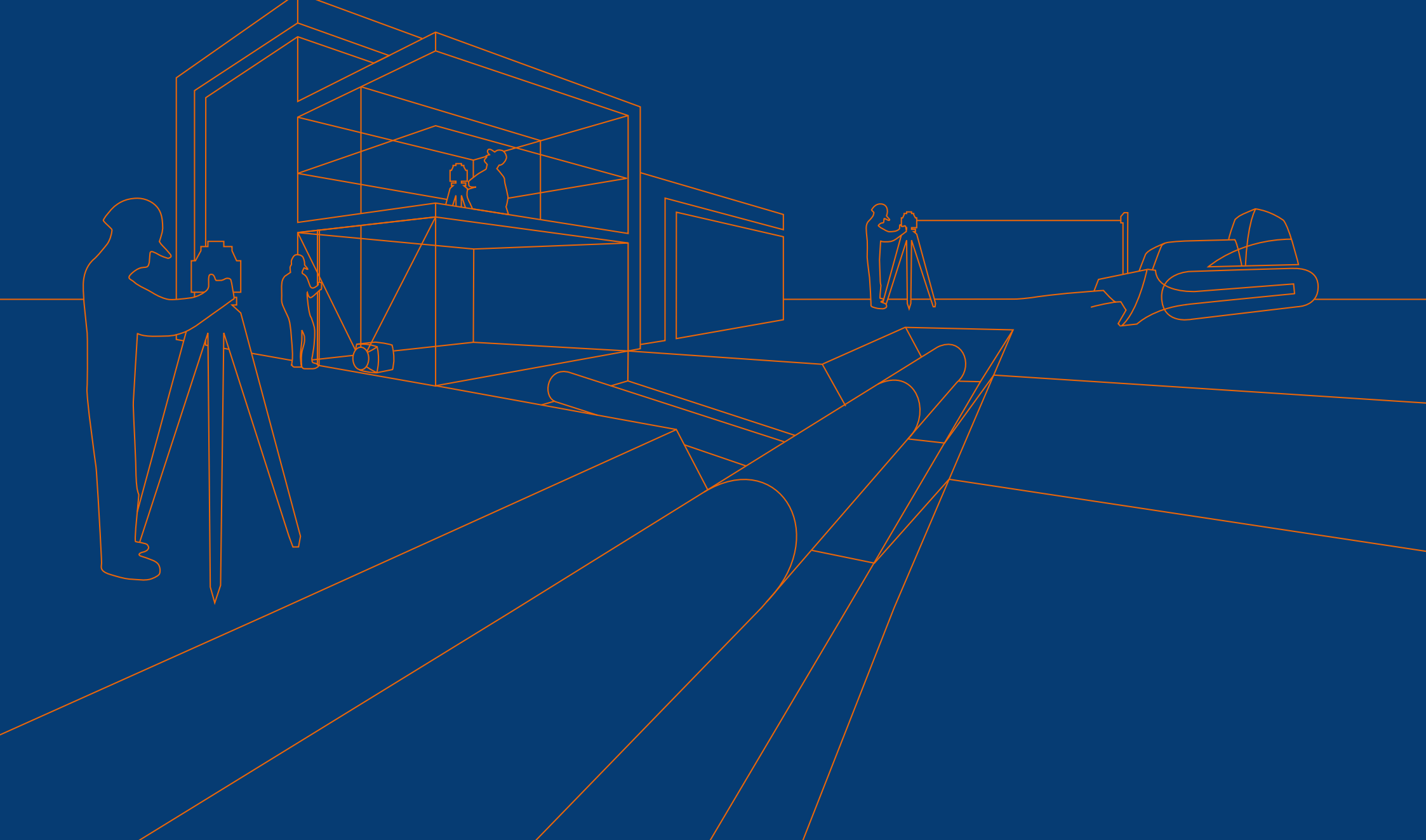
Tailor-made information.

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



Further information is available @

www.geo-fennel.com



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geo
F E N N E L