

Laser measuring tools
and surveying equipment



Precision by tradition

geo
F E N N E L

NEWSFLYER 2009

TRADES AND TASKS

- Electrical: conduit, trunking, switches, sockets
- Floor laying: height construction and control
- Tiles: wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: posts, fences, beams, structures
- Plumbing, heating: cables, pipes, radiators
- Interior design: pictures, curtains, lighting
- Painting and decorating: wall covering, borders
- Interior works: levelling

FEATURES

- For horizontal and vertical measurements
- Visible laser beam
- Horizontal easy setting with 2 bubbles
- Scanning function (2 step) and laser point mode
- Multi-stage rotating beam
- Permanent 90° beam to zenith

Manual Laser Level FL 30

For horizontal and vertical use.

A robust manual laser quick to set-up and easy to operate. Easy set-up with two bubbles. For horizontal and vertical measurements. Scanning, laser point mode and permanent 90° beam to zenith. The ideal laser for indoor applications, suitable for simple outdoor jobs.



SUPPLIED WITH

- Padded carrying case
- Floor / tripod mount
- Set of batteries

Art.-No.

271000

FL 30 SET

FL 30 with all the necessary accessories to start working immediately!

Consists of: Elevating tripod, wall mount, magnetic target, laser glasses for better visibility of the laser beam, 2,5 m levelling staff and a receiver that all fit neatly into the handy carrying case.



TECHNICAL DATA

Laser diode	red
Accuracy	± 2 mm / 10 m
Working range w/o receiver	Ø 15 m*
Working range with receiver	Ø 120 m
Rotating speed	150 – 300 rpm adjustable
Laser class	2
Scan angle	0°, 5°, 10°
Temperature range	-10 °C – +45 °C
Dust/water protection	IP 54
Dimensions w/o mount	90 x 90 x 120 mm
Weight	0,74 kg
Power supply	4 x AA Alkaline batteries

* depending on room illumination

SUPPLIED WITH

- Container
- Floor / tripod mount
- Set of batteries
- 2,5 m levelling staff
- Elevating tripod with max. height of 1,58 m
- Receiver with clamp
- Magnetic target
- Laser glasses
- Height adjustable wall mount

Art.-No.

271500



Rotating Laser

FL 210A and FLG 210A-Green

Horizontal and vertical lasers for interior and exterior applications. Two new models with improved self-levelling, rotational accuracy and improved technical construction. Instant self-levelling makes these lasers ideal when applications necessitate frequent positional changes.

Improvements include:

- New innovative design ensures instant self-levelling with improved stability
- Increased horizontal accuracy
- Floor / wall mount integrated into housing
- Detachable battery compartment can be charged separately
- Intelligent battery charger
- Improved operational safety: Rotation only possible when compensator is unlocked

A highly visible laser beam, scanning functions, permanent 90° beam to zenith, automatic shut-off when misaligned and a comprehensive set of accessories make these models ideal for the all-rounder.

FLG 210A-Green

Self-levelling rotating laser for interior horizontal and vertical applications. Similar functions to the FL 210A but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances.

TECHNICAL DATA	FL 210A	FLG 210A-GREEN
Self-levelling range	± 3,5°	± 3,5°
Laser diode	red	green
Accuracy horizontal	± 1 mm / 10 m	± 1 mm / 10 m
Accuracy vertical	± 1,5 mm / 10 m	± 1,5 mm / 10 m
Working range with receiver	Ø 400 m	Ø 400 m
Rotating speed	150, 200, 250, 300 rpm	150, 200, 250, 300 rpm
Laser class	2	3R
Scan angle	0°, 20°, 40°	0°, 20°, 40°
Temperature range	-10 °C – +45 °C	0 °C – +40 °C
Dust/water protection	IP 66	IP 66
Dimensions	180 x 162 x 202 mm	180 x 162 x 202 mm
Weight incl. all accessories	5,7 kg	5,3 kg
Power supply	4 x C NiMH*	4 x C NiMH*

* with 6,4 V intelligent charger, battery can be charged externally, alkaline batteries can be used alternatively

SUPPLIED WITH	FL 210A	FLG 210A-GREEN
	<ul style="list-style-type: none"> • Receiver FR 45 with clamp • Remote control • Rechargeable batteries / Charger • Floor / wall mount • Magnetic target • Laser glasses • Carrying case 	<ul style="list-style-type: none"> • Remote control • Rechargeable batteries / Charger • Floor / wall mount • Magnetic target • Laser glasses • Carrying case • Receiver FRG 45-Green with clamp (optional)

Art.-No.	291500	291700
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TRADES AND TASKS

- Electrical: conduit, trunking, switches, sockets, planning, layout and fixtures for fittings
- Floor laying: height construction and control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, post, fences, beams, structures, balustrade, handrails, edging
- Plumbing, heating: cables, pipes, radiators
- Building: foundations and concrete flooring, cutting checks, masonry, walls
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Decorating: wall covering, borders
- Dry mortarless construction: aligning tracks and profiles, dry mortarless stone walls, suspended ceilings

FEATURES

- Instant self-levelling
- Horizontal self-levelling with automatic shut-off and audible alarm when out of tolerance
- Easy vertical set-up with one foot screw
- Variable rotating speed
- Scanning and laser dot mode
- Permanent 90° beam to zenith
- NiMH batteries
- Can be used with alkaline batteries
- Dust/water protection IP 66



TRADES AND TASKS

- Electrical: conduit, trunking, switches, sockets, planning, layout and fixtures for fittings
- Floor laying: height construction and control
- Prefabricated construction: alignment, measurement, control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, posts, fences, beams, structures, balustrade, handrails, edging
- Warehouse construction: piling, beams, facades
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Building: foundations and concrete flooring, masonry, walls, cutting checks, prefabricated and Ferro concrete construction, steel and concrete piling
- Surveyor: inspection, measurement
- Civil engineering: groundwork and concrete flooring, control of profiles
- Dry mortarless construction: suspended ceilings, stud wall construction



FEATURES

- Visible laser beam
- Adjusted slope setting (manual) up to $\pm 5^\circ$ ($\pm 9\%$) in X and Y axis
- Single slope setting up to $\pm 5^\circ$ ($\pm 9\%$)
- 2 Rotating speeds
- Variable scanning and laser point mode
- Permanent 90° beam to zenith
- V-W-S function combined with TILT function
- Automatic TILT function
- Remote control screen
- NiMH batteries
- Can be used with alkaline batteries
- Li-Ion battery technology
- Intelligent charger
- Dust/water protection IP 66

Rotating Laser FL 260VA



Fully automatic horizontal and vertical laser. Compact ergonomic design and intuitive operation. A multi-functional laser for interior and exterior applications.

Innovational design building on the tried and tested functionality of FL 250VA-N:

- Improved technical design and accuracy
- Enhanced scanning functions with smaller steps and enlarged range
- Advanced slope setting functions:
 - Horizontal:
 - Manual slope setting in X and Y axis up to $\pm 5^\circ$ ($\pm 9\%$)
 - One axis (X or Y) manual slope, 2nd axis self-levelled
 - Vertical:
 - Manual slope setting in X and Z axis
 - X axis manual slope, Y axis self-levelled
- V-W-S function (Vibration-Wind-Security) – rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- Remote control screen – remote control function can be switched off. Can be used to avoid interference with other instruments on site.
- Li-Ion battery technology: 100 % power until fully discharged, no memory effect, no self-discharge, top-up charging possible
- Intelligent charger
- Integrated floor mount with centring mark

SUPPLIED WITH

- Receiver FR 45 with clamp
- Remote control
- Rechargeable batterie / Charger
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case

Art.-No. 242000



Rotating Laser FLG 260VA-Green

Fully automatic horizontal and vertical laser for internal applications. Similar functions to the FL 260VA but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances.

TECHNICAL DATA	FL 260VA	FLG 260VA-GREEN
Self-levelling range	5°	5°
Laser diode	red (HP version)	green
Accuracy horizontal	± 0,5 mm / 10 m	± 0,5 mm / 10 m
Accuracy vertical	± 1,0 mm / 10 m	± 1,0 mm / 10 m
Working range with receiver	Ø 600 m	Ø 400 m
Rotating speed	800, 300 rpm	800, 300 rpm
Laser class	3R	3R
Scan angles	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°
Manual slope setting X and Y axis	± 5° (± 9 %)	± 5° (± 9 %)
Single slope	One axis tilted, other axis self-levelled	
Temperature range	-10 °C – +45 °C	0 °C – +40 °C
Dimensions	219 x 160 x 202 mm	219 x 160 x 202 mm
Weight	2,6 kg	2,6 kg
Dust/water protection	IP 66	IP 66
Automatic tilt function	yes	yes
V-W-S function	yes	yes
Power supply	6,4 V*	6,4 V*

* with 6,4 V intelligent charger, battery can be charged externally, alkaline batteries can be used alternatively

SUPPLIED WITH

- Remote control
- Rechargeable batteries
- Charger
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case

Art.-No. 242500

OPTIONAL

- Receiver FRG 45-Green

Art.-No. 252300

TRADES AND TASKS

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets
- Tiles: floor, wall
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Exhibitions design and construction: panels, partitions, construction
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, suspended ceilings

FEATURES

- 2 laser crosses at 90° to each other
- Laser cross to the ceiling
- Plumb down beam
- Pulse function for use with receiver
- Transport lock
- Wall / tripod mount magnetically fixed to the instrument
- Wall / tripod mount with centring adapter for optimum positioning over a floor point
- Mini tripod
- Visual and audible alarm when out of level
- Use with receiver FR 55 / FR 55-M to extend working range up to 30 m

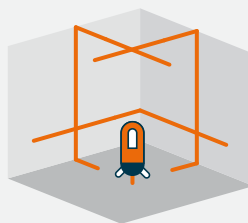
FL 45

The versatile.

For numerous indoor applications. Two laser crosses at 90° to each other. Laser cross to the ceiling. Plumb down beam to the floor.



Centering adapter



TECHNICAL DATA

Laser diode	red
Laser class	2
Accuracy	± 3 mm / 10 m
Working range w/o receiver	10 m*
Working range with receiver	30 m
Self-levelling range	± 3°
Temperature range	-10°C bis +45°C
Operating time	12 h
Dimensions	90 x 90 x 146 mm
Weight	1 kg
Dust/water protection	IP 54
Power supply	3 x AA Alkaline batteries

* depending on room illumination

SUPPLIED WITH

- Padded carrying case
- Set of batteries
- Floor / wall mount
- Mini tripod
- Magnetic target
- Laser glasses

Art.-No. 520500

OPTIONAL

Art.-No. FR 55 500510
Art.-No. FR 55-M 500520

FEATURES

- Platform size 150 x 95 mm
- Robust mount for use on walls and ceilings
- Ideal for indoor use e.g. setting out suspended ceilings
- Cm / inch graduation
- Precise adjustment with large slow motion wheel
- Supplied with carrying bag

Art.-No. 290610

Wall and Ceiling mount WH 2

New version with large metal platform suitable for all geo-FENNEL lasers.



example of use



Professional two-way radio F 6

Two-way radio for professional use.

F 6-HM



TECHNICAL DATA

RF output power	500 mW
Frequency range	446.0062 – 446.0937 Mhz
Channels	16 (15+S)
Audio output	500 mW
Battery	7,2 V Li-Ion, 1100 mAh
Charging time	6 h
Working time (per charge)	24 h
Weight	225 g
Dimensions	54 x 99 x 31 mm
Temperature range	-20 °C – +60 °C
Working ranges	
· outside, open terrain	5 km
· outside, built-up area	3 km

FEATURES

- Clear audio quality
- Long range
- Robust housing, IP-X6
- European wide license toll free
- LED shows receipt, transmission and battery status

SUPPLIED WITH

- Two-way radio
- Rechargeable battery
- Charger
- Belt clip
- Hand loop
- User manual

Art.-No. 870000

OPTIONAL

- F 6-HM hand microphone with jacket clip

Art.-No. 870100

Electronic inclinometers S-Digit 60WL und 120WL

Electronic inclinometers for everyday use.



FEATURES

- 180° rotatable display
- Inclination direction indication
- Working range 4 x 90°
- Different signal tones when approaching to 0° and 90°
- Continuous tone at 0° and 90°
- 2 built-in 90° vials, 1 horizontal vial
- Recessed handgrip for ergonomic use
- Integrated hooks

TECHNICAL DATA

	S-Digit 60WL	S-Digit 120WL
Length	60 cm	120 cm
Measuring units	°, %, mm, m, in, ft	°, %, mm, m, in, ft
HOLD function	ja	ja
Accuracy 0° + 90°	± 0,1°	± 0,1°
Accuracy 1° – 89°	± 0,2°	± 0,2°
Power supply	3 x AAA batteries	3 x AAA batteries
Operating time	60 h continuous	60 h continuous
Dimensions	600 x 61 x 28 mm	1200 x 61 x 28 mm

Art.-No. 640000

640100

SUPPLIED WITH

- Set of batteries
- Padded carrying case

TRADES AND TASKS

- Temperature measurements of liquid construction materials like asphalt; isolation checks
- Measurements in the HVAC branch, energy supply
- Industrial and laboratory application

FEATURES

- Indication of MAXimum value
- Data hold function
- Large display (45 mm) with illumination

SUPPLIED WITH

- Flexible wire probe TP-300
- Set of batteries
- Case
- User manual

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



TECHNICAL DATA	FT 1300-1	FT 1300-2
Scanfunction	1 measurement	2 measurements or temperature difference
Sampling rate	2,5x per second	2,5x per second
Accuracy	± 0,5% / ± 1°C	± 0,5% / ± 1°C
Display resolution	0,1° / 1°	0,1° / 1°
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	Batteries	Batteries
Art.-No.	800400	800410

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



5-in1 Digital Multimeter
FMM 5

SUPPLIED WITH

- Flexible wire probe TP-300
- Set of batteries
- Case
- Testing cable

TECHNICAL DATA			
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*
* digital			

Art.-No. 800600

TP-300

Flexible wire probe.

- K-type element
- Ø 2,5 mm
- Length 100 cm
- Measurement temperature range
-50°C – +300°C
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800900



TP-500

All-purpose probe.

- K-type element
- Ø 3 mm
- Length of probe 12 cm
- Length of wire 76 cm
- Temperature measurement of
air or liquids (i.e. oils, water, sand,
building materials)
- Measurement temperature range
-50°C – +900°C
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800901



NR-88B

Flexible steel probe.

- K-type element
- Ø 2 mm
- Length 100 cm
- Measurement temperature range
-50°C – +450°C
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800902



NR-31B

Surface temperature probe.

- K-type element
- Length of probe 12 cm
- Length of wire 150 cm
- Measurement temperature range
-50°C – +450°C
- Temperature measurement of
surfaces on hard materials
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800903



NR-33

Right angle surface temperature probe.

- K-type element
- Temperature measurement of
surfaces which are difficult to
reach or which are hot with no
need to keep the hand over
heated area
- Length of probe 34 cm
- Length of wire 150 cm
- Measurement temperature range
-50°C – +450°C
- Temperature measurement of
surfaces on hard materials
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800904



NR-38

Air temperature probe.

- Quick measurement of air and
gas temperature
- Length of probe 21 cm
- Length of wire 150 cm
- Measurement temperature range
-50°C – +800°C
- Application with FT 1300-1,
FT 1300-2, FMM5

Art.-No. 800905



Humidity Meter

FFM 100

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



TRADES AND TASKS

- Building materials
- Concrete floors, walls, ceilings

FEATURES

Quick measurement of humidity in building materials without destruction of the surface.

- Indication of minimum / maximum values
- Sensor type metal spheroid

SUPPLIED WITH

- Set of batteries
- Case

Art.-No. 800650

TECHNICAL DATA

Measuring depth	20 – 40 mm
Measuring range	0 – 100
Resolution	1
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	Batteries

Digital Thermometer

FT 1000-Pocket

Handy thermometer with immersion temperature probe. Pocket-size, light weight and easy to operate.



TRADES AND TASKS

Temperature measurement of liquids and soft materials.

FEATURES

- Handy thermometer with immersion probe
- Pocket-size, light weight, easy to operate

SUPPLIED WITH

- Set of batteries
- Incorporated all-purpose probe

Art.-No. 800420

TECHNICAL DATA

Temperature range	-20 °C – +1000 °C
Accuracy	± 3 %
HOLD function	yes
Automatic shut-off	yes
Battery status indicator	yes
Dimensions	117 x 65x 24 mm
Weight	0,16 kg
Power supply	Batteries

Infrared Thermometer FIRT 550-Pocket

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

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

FIRT 800-Pocket

Small and handy infrared thermometer, easy to operate, for versatile applications. Particular feature: Measurement with dual laser to focus the target.



TECHNICAL DATA	FIRT 550-Pocket	FIRT 800-Pocket
Temperature range	-50 °C – +550 °C	-35 °C – +800 °C
D(istance):S(pot)	12:1	10:1
Emissivity adjustable	0,1 – 1,0	0,1 – 1,0
Accuracy	±1 %	±1 %
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm
Resolution display	0,1°C	0,1°C
Response time	0,15 sec	0,3 sec
Spectral response	8-14 µm	8-14 µm
Laser diode	< 1 mW	< 1 mW
Wave length	630 – 670 nm	630 – 670 nm
Laser class	2	2
Power supply	9 V battery	9 V battery
Weight	0,176 kg	0,176 kg
Art.-No.	800001	800002

SUPPLIED WITH

- Set of batteries
- Case

FEATURES

- Maximum / minimum
- Permanent measurement
- Plus / minus
- Area / volume
- Room function summary
- Indirect height measurement (Pythagoras)
- Measurements despite obstructions
- Measurement of facade areas
- Measurements of vertical angles up to $\pm 45^\circ$



DISTO D5

The Leica Disto™ D5 convinces with lucid colour display and shows crystal-clear image when targeting with the digital pointfinder. The 4 x zoom makes finding the target at long distances much easier and allows measurements to be taken even in glaring sunshine. With the built-in tilt sensor you can also take indirect measurements and measure past obstructions (horizontal distance).

TECHNICAL DATA

Distance	0,05 – 200 m
Accuracy	$\pm 1,0$ mm
Dust/water protection	IP 54
Weight	195 g

SUPPLIED WITH

- Holster
- Hand loop
- Set of batteries

Art.-No.

300006

FEATURES

- Maximum / minimum
- Permanent measurement
- Plus / minus
- Area / volume
- Room function summary
- Indirect height measurement (Pythagoras)
- Measurements despite obstructions
- Measurement of facade areas
- Indirect slope measurements
- Bluetooth™
- 360° tilt sensor for measurement of any slope (even overhead)



DISTO D8

The Leica Disto™ D8 is equipped with Bluetooth® technology incl. software for wireless and easy transfer to PCs: With the high resolution colour display and the digital pointfinder with 4 x zoom you can measure long range distances quickly and easily because you always see your targeted point. The combination of angle and distance measurements allows you to determine distances where conventional methods fail. The horizontal distance, for example, can also be determined quickly and efficiently past obstacles or the elevation of a tree, even though there is no reflective point.

TECHNICAL DATA

Distance	0,05 – 200 m
Accuracy	$\pm 1,0$ mm
Dust/water protection	IP 54
Weight	205 g

SUPPLIED WITH

- Holster
- Hand loop
- Set of batteries

Art.-No.

300008

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