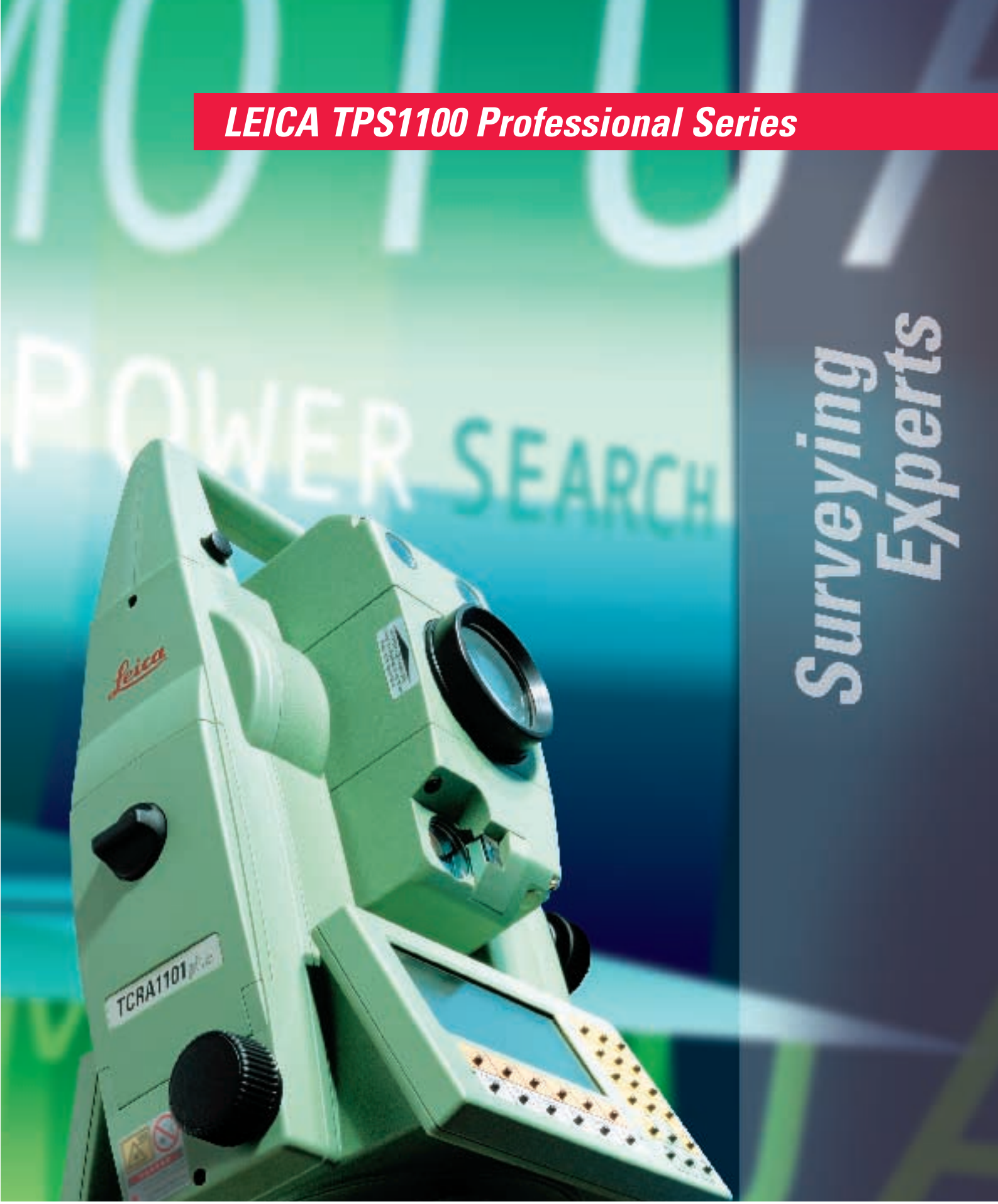
LEICA TPS1100 Professional Series



High-End Surveying
Precise, Quick, and Intelligent

Leica
Geosystems

TPS1100 Professional Series –
More time for the essentials.

Automated, practical programs are the main features of the TPS1100 Professional Series. Modern functions that make your work more productive, more precise, and more relaxed.

Sophisticated functions for very demanding high-end users

The TPS1100 Professional Series was designed to provide practical solutions to make surveying processes clear, efficient, and productive. The TPS1100 Professional Series includes a wide variety of practical, automated functions and optimal user comfort to achieve the highest degree of efficiency within the shortest time.

One of many examples is ATR, the Automatic Target Recognition. The ATR fine points to targets by itself. Manual sighting is no longer required. Surveys are completed quicker and more relaxed, leaving more time to concentrate on the essential aspects of your work.

Flexible in everyday applications

The TPS1100 Professional Series high-end surveying instruments offer a large degree of flexibility. The easy-to-read, clear user interface and the professional programming environment invite you to configure the instrument to meet your individual requirement and personal preferences. The modular system assures a large variety of available models and options to meet varying demands and requirements.

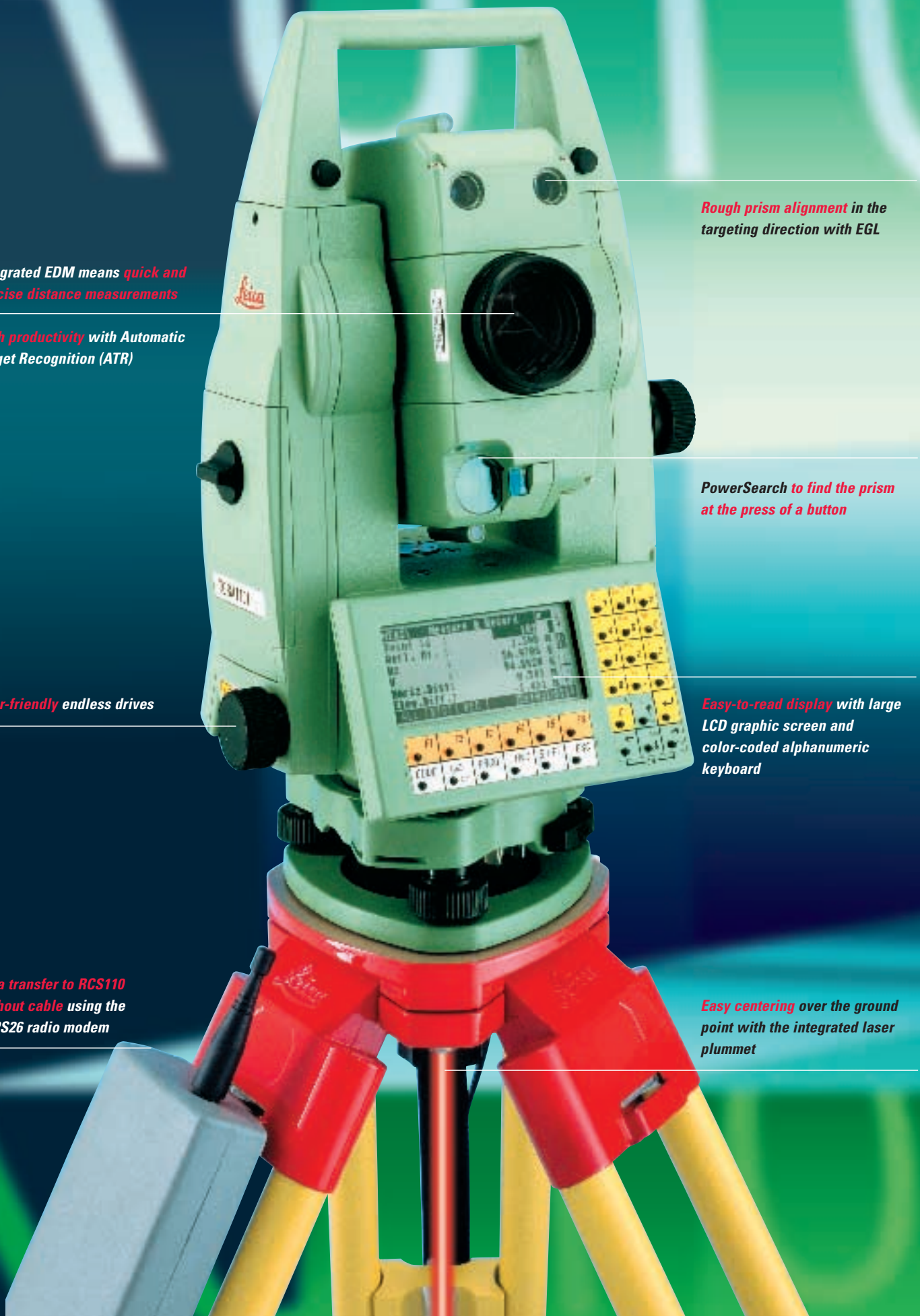
Software for efficient data acquisition

Information technologies and surveying are growing closer together. This is evident in the range of software available for the TPS1100 Professional Series. The application programs are tailored to acquire and process data within the instrument and then to transfer the data from the instrument to a computer.

Leica's proven know-how

All the proven functions that made previous models so successful, are included in the new TPS1100 Professional Series, plus the latest technological developments; a lightweight practical design, with an easy-to-learn user interface, high quality and with an excellent price/performance ratio.

Reasons professionals recommend the TPS1100



Rough prism alignment in the targeting direction with EGL

Integrated EDM means *quick and precise distance measurements*

High productivity with Automatic Target Recognition (ATR)

PowerSearch *to find the prism at the press of a button*

User-friendly endless drives

Easy-to-read display with large LCD graphic screen and color-coded alphanumeric keyboard

Data transfer to RCS110 without cable using the TCPS26 radio modem

Easy centering over the ground point with the integrated laser plummet

Modular battery concept in unified camcorder format

Develop your own applications with the GeoBasic programming environment

Leica Survey Office; the user-friendly program to create code lists and coordinate files, exchange data and install software

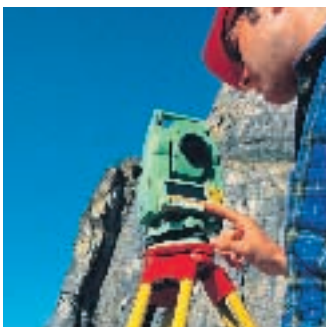
Efficient data recording; store data using the PCMCIA-memory card that is interchangeable with Leica GPS and DNA instruments.

Optimal performance for every application with the extensive range of accessories

The prism does not have to be aimed at the instrument thanks to 360° reflectors

The RCS1100 remote control lets you operate from the target point.

Automatic Target Recognition (ATR) – measure without fine pointing and focusing



Have you thought about how much time you lose by manual targeting? ATR acquires twice the amount of measured points within the same time.

This is how it works:

After roughly targeting the reflector and triggering a measurement, the instrument moves the telescope automatically to the center of the reflector and then makes the measurement.

Ideal for:

Stake out, Topographical Surveying, Free Stationing and new measurements using routines such as Sets of Angles and Monitoring.

Efficient and relaxed

ATR attains a high degree of efficiency with the increase in measuring speed. Fine pointing and focusing is no longer required making for relaxed working procedures. ATR assures constant precision – under any condition and independent of the surveyor.

Automatic Target Tracking –
measure with record setting speed

Mass point surveys are very time consuming if every point has to be targeted and recorded individually. ATR does all of that for you and records all measured data, point-by-point.

This is how it works:

After the first targeting, the instrument tracks the reflector automatically – even if there are brief interruptions of the line-of-sight. Intelligent software routines assure reliable tracking – even when light is reflected from other sources.

Ideal for:

Topographic surveys, creating digital models for landscapes or acquiring data for GIS systems.

Continuous and quick

With ATR, fine pointing is no longer required and rough targeting is redundant. Used in combination with the 360° reflector even aligning the reflector to the instrument is not required. By using distance tracking, measured values are recorded without interrupting target tracking. Just press the button.

RCS1100 remote control –
measure from the target point

Measure from the target point for efficient practical surveying! You are able to record the information yourself or perform tasks on your own.

This is how it works:

In remote mode the instrument transfers its displayed data to the RCS1100 remote control, which has an identical keyboard and display. In this way, all instrument functions can be remotely controlled.

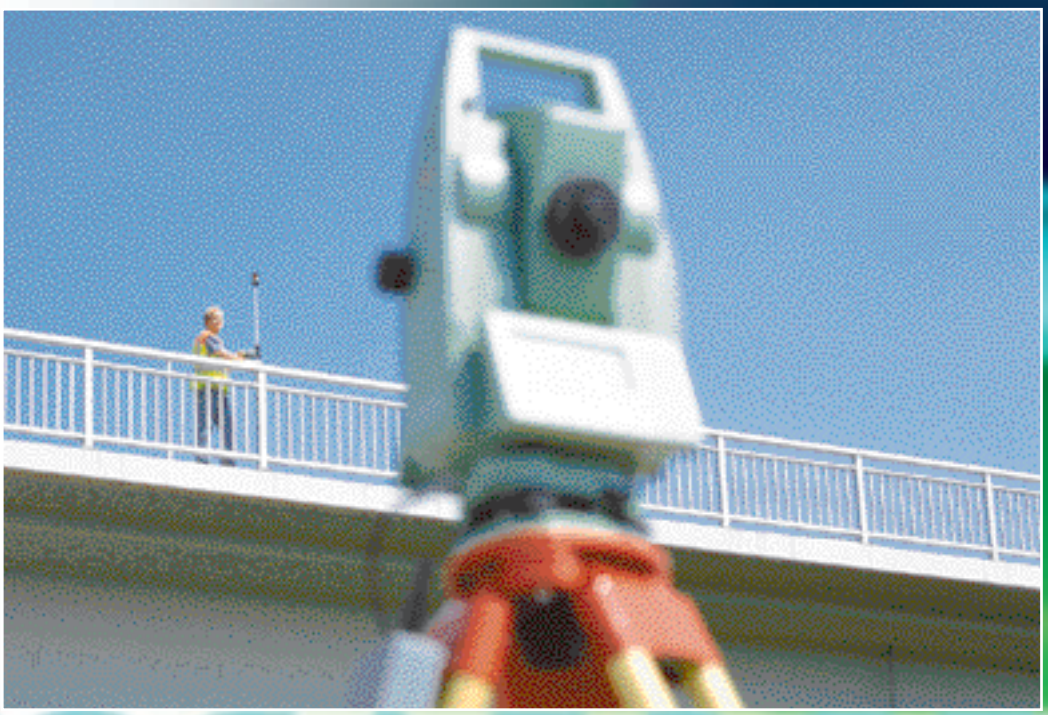
Ideal for:

One-man operation, stake-outs and topographic mass-point surveys with coding.

Quick and efficient one-man operation

The RCS1100 lets you work from the target point. You can directly enter codes, enter or retrieve information whilst at the prism. Intelligent search functions, such as defining a work area, joystick controls or compass, and predicting the 3D path of the target facilitate and accelerate working at the reflector.

PowerSearch finds prisms –
just press the button



Just press the button to find the prism and save valuable time.

Never before have you been ready to measure this quickly!

This is how it works:

In PowerSearch mode, the instrument rotates around its standing axis and sends out a vertical laser fan.
As soon as it finds a prism, the instrument stops rotating and automatically targets the prism.

Ideal for:

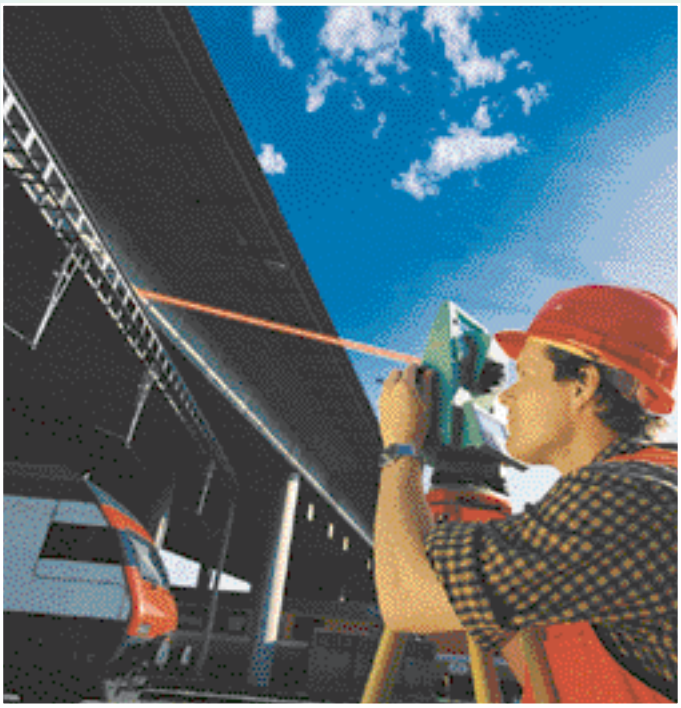
Topographic mass-point surveys in hard to access landscape. One-man operation surveys with the RCS1100 remote control. Machine guidance.

Ready to measure immediately

PowerSearch finds your prism rapidly. Just press the button and you are ready to measure, even when tracking has been interrupted. No special prisms are required so you can continue to use the accessories you already have. When solo surveying, PowerSearch saves you a lot of time.

Reflectorless distance measurement – measure directly to the target

It is often very difficult to precisely measure an inaccessible target. With reflectorless distance measurement, you can quickly measure to the target with one keystroke and without any complicated measurement programs.



This is how it works:

Using the phase measuring method, the instrument sends out a concentrated, visible laser that clearly marks the target and determines the distance with a high degree of accuracy.

Ideal for:

Measuring inaccessible objects, house corners, facades and interiors. With motorized drives, surfaces can be scanned and profiles measured.

Reflectorless and precise

Reflectorless distance measurement lets you measure over small or even large obstacles in your daily work. Just measure directly to the object and achieve reliable and accurate results.

Distance meter (IR), ATR and PowerSearch:
Laser class 1 acc.
IEC 60825-1 resp. EN 60825-1
Laser class I acc.
FDA 21 CFR Ch. I §1040

EGL:
LED class 1 acc.
IEC 60625-1 resp. EN 60825-1

Distance meter (RL, standard range) and laser plummet:
Laser class 2 acc.
IEC 60825-1 resp. EN 60825-1
Laser class II acc.
FDA 21CFR Ch. I §1040

Distance meter (RL, extended range):
Laser class 3R acc.
IEC 60825-1 resp. EN 60825-1
Laser class IIIa acc.
FDA 21CFR Ch. I §1040

TPS1100 software packages – higher performance and productivity with the appropriate software

Standard

- Free Station
- Orientation / Height Transfer
- Resection
- Stake out
- Tie Distance
- Remote Height

TPS Advanced

- Reference Line
- COGO
- Sets of Angles
- Area
- Traverse
- Local Resection

TPS Expert

- Reference Line
- COGO
- Sets of Angles
- Area
- Traverse
- Local Resection
- Auto Record
- Hidden Point
- Reference Plane
- Face Scan
- DTM Stakeout

Auxiliary programs

- Road Plus
- Monitoring

TQM
ISO 9001 / ISO 14001

Total Quality Management is our commitment to total customer satisfaction

For more information about our TQM program, ask your local Leica Geosystems agent.

Leica Geosystems

Leica Geosystems AG
CH-9435 Heerbrugg
(Switzerland)
Phone +41 71 727 31 31
Fax +41 71 727 46 73
www.leica-geosystems.com

732472en – IX.02 – RDV

TPS1100 Professional Series – Technical data

Define your requirements

Overview of the models and options	TC	TCR	TCRM+	TCA+	TCRA+	TCRA+ Power Search
Angle measurement	●	●	●	●	●	●
Distance measurement (IR)	●	●	●	●	●	●
Reflectorless and Long Range distance measurement (RL)	~	●	●	~	●	●
Motorized			●	●	●	●
Automatic Target Recognition (ATR)			~	●	●	●
PowerSearch (PS)				~	~	●
Electronic Guide Light (EGL)	❍	❍	❍	●	●	●
Remote Control RCS1100	❍	❍	❍	❍	❍	❍

● Standard ❍ Optional ~ Later upgrade possible – Option: standard range + plus

Angle measurement

Accuracy	**Type 1101**	**Type 1102**	**Type 1103**	**Type 1105**
Hz, V (ISO 17123-3):	1.5″ (0.5 mgon)	2″ (0.6 mgon)	3″ (1 mgon)	5″ (1.5 mgon)
Display resolution:	1″ (0.1 mgon)	1″ (0.1 mgon)	1″ (0.5 mgon)	1″ (0.5 mgon)
Method	absolute, continuous, diametrical			

Distance measurement (IR)

Range (average atmospheric conditions)	
Round prism (GPR1):	3000 m
360° reflector (GRZ4):	1500 m
Mini prism:	1200 m
Reflective tape (60 mm x 60 mm):	250 m
Shortest measurable distance:	0.2 m to round prism (GPR1) / 1.5 m to a 360° reflector (GRZ4)
Accuracy (ISO 17123-4) / time for a measurement	
Standard mode:	2 mm + 2 ppm / 1.0 sec
Quick mode:	5 mm + 2 ppm / 0.5 sec
Tracking mode:	5 mm + 2 ppm / 0.3 sec
Quick mode tracking:	10 mm + 2 ppm / < 0.15 sec
Display resolution:	1 mm
Method	Principle of phase measurement (coaxial, invisible infrared laser)

Reflectorless and Long Range distance measurement (RL)

Range (average atmospheric conditions)	
Reflectorless (extended range):	170 m (Kodak Gray Card, white side)
Reflectorless (standard range):	80 m (Kodak Gray Card, white side)
Shortest measurable distance:	1.5 m
Long Range to round prism (GPR1):	1000 m – 5000 m
Accuracy (ISO 17123-4) / time for a measurement	
Reflectorless (standard mode):	3 mm + 2 ppm / typ. 3–6 sec, max. 12 sec
Reflectorless (tracking mode):	10 mm + 2 ppm / typ. 3–6 sec, max. 12 sec
Long Range:	5 mm + 2 ppm / typ. 2.5 sec, max. 8 sec
Laser dot size	
At 50 m:	approx. 10 mm x 20 mm
At 100 m:	approx. 15 mm x 30 mm
At 200 m:	approx. 30 mm x 60 mm
Method	Principle of phase measurement (coaxial, visible red laser)

Motorized (M)

Maximum speed	
Rotating speed:	50 gon / sec

Automatic Target Recognition (ATR)

Range ATR mode / LOCK mode (average atmospheric conditions)	
Round prism (GPR1):	1000 m / 800 m
360° reflector (GRZ4):	600 m / 500 m
Mini prism:	500 m / 400 m
Reflective tape (60 mm x 60 mm):	65 m / ---
Shortest measurable distance:	1.5 m to 360° reflector (GRZ4)
Accuracy / time for a measurement	
Distances < 300 m:	3 mm / 3 sec
Distances > 300 m:	1.5″, 2″, 3″, 5″ (equivalent type) / 3–4 sec
Maximum speed (LOCK mode)	
Tangential (standard mode):	25 m / sec at 100 m
Tangential (tracking mode):	18 m / sec at 100 m
Radial (tracking mode):	4 m / sec
Method	Digital image processing (laser beam)

High-End Surveying
Precise, Quick, and Intelligent

Leica Geosystems

PowerSearch (PS)

Range (average atmospheric conditions)	
Round prism (GPR1):	200 m
360° reflector (GRZ4):	200 m (optimal when aligned with the instrument)
Mini prism:	100 m
Shortest measurable distance:	5 m
Search time	
Typical search time:	< 10 sec
Maximum speed	
Rotating speed:	50 gon / sec
Method	Digital signal processing (laser swath)

Electronic Guide Light (EGL)

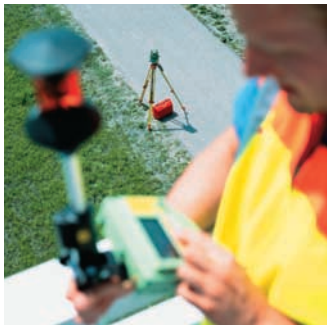
Range (average atmospheric condition)	
Working range:	5 m – 150 m
Accuracy	
Positioning accuracy:	5 cm at 100 m

Remote Control RCS1100

Method	Transfer via integrated radio modem
Control unit	
Display:	8 lines with 32 characters 256*64 pixels, graphic LCD
Keyboard:	30 keys (6 function keys, 12 alphanumeric keys)
Interface:	RS232
Battery	
Type:	Nickel Metal Hydride (NiMH)
Voltage:	6 V
Capacity (GEB111):	1.8 Ah
Weight	
RCS1100:	0.77 kg
Battery (GEB111):	0.2 kg
Reflector pole adapter:	0.18 kg
Working environment	
Working temperature range:	–20°C to +50°C
Storage temperature range:	–40°C to +70°C
Dust/water (IEC 60529):	IP54
Humidity:	max. 95% non-condensing

General data TPS1100

Compensator	**Type 1101**	**Type 1102**	**Type 1103**	**Typ 1105**
Setting range:	4′ (0.07 gon)	4′ (0.07 gon)	4′ (0.07 gon)	4′ (0.07 gon)
Setting accuracy:	0.5″ (0.2 mgon)	0.5″ (0.2 mgon)	1.0″ (0.3 gon)	1.5″ (0.5 mgon)
Method:	centralized dual axis compensator			
Level	**Type 1101**	**Type 1102**	**Type 1103**	**Type 1105**
Sensitivity of circular level:	6′ / 2 mm	6′ / 2 mm	6′ / 2 mm	6′ / 2 mm
Display resolution of level:	1″ (0.1 mgon)	1″ (0.1 mgon)	1″ (0.5 mgon)	1″ (0.5 mgon)
Telescope				
Magnification:	30x			
Free aperture of objective:	40 mm			
Field of view:	1°30′ (1.66 gon) / 2.7 m at 100 m			
Focussing:	1.7 m to infinity			
Control unit				
Display:	8 lines with 32 characters 256*64 pixels, graphic LCD			
Keyboard:	30 keys (6 function keys, 12 alphanumeric keys)			
Angle display:	360°′ ″, 360° (decimal), 400 gon, 6400 mil, V%			
Distance display:	Meter, Int. Ft, Int. Ft/Inch, US Ft, US Ft/Inch			
Numbers:	1 / 2 (optional)			
Data storage				
Memory card:	PCMCIA ATA Flash (16 MB) / PCMCIA SRAM (512 KB, 2 MB)			
Number of data records:	18000 / 2 MB			
Interface:	RS232			
Laser plummet				
Accuracy:	deviates from the plumb line 1.5 mm (2 sigma) at 1.5 m			
Point diameter:	2.5 mm at 1.5 m			
Endless drive				
Number of drives Hz / V:	1 / 1			
Steps:	infinite			
Battery				
Type:	Nickel Metal Hydride (NiMH)			
Voltage:	6 V			
Capacity (GEB121):	3.6 Ah			
Number of measurements:	400 – 600			
Weight				
Instrument:	4.7 – 4.9 kg (10.4 –10.8 lbs)			
Battery (GEB121):	0.4 kg (0.8 lbs)			
Tripod (GDF121):	0.8 kg (1.7 lbs)			
Working environment				
Working temperature range:	–20°C to +50°C			
Storage temperature range:	–40°C to +70°C			
Dust/water (IEC 60529):	IP54			
Humidity:	max. 95% non-condensing			



Distance meter (IR), ATR and PowerSearch:
Laser class 1acc.
IEC 60825-1 resp. EN 60825-1
Laser class I acc.
FDA 21CFR Ch. I §1040

Distance meter (RL, standard range) and laser plummet:
Laser class 2 acc.
IEC 60825-1 resp. EN 60825-1
Laser class II acc.
FDA 21CFR Ch. I §1040

Distance meter (RL, extended range):
Laser class 3R acc.
IEC 60825-1 resp. EN 60825-1
Laser class IIIa acc.
FDA 21CFR Ch. I §1040

EGL:
LED class 1 acc.
IEC 60625-1 resp. EN 60825-1

Leica Geosystems

Leica Geosystems AG
CH-9435 Heerbrugg
(Switzerland)
Phone +41 71 727 31 31
Fax +41 71 727 46 73
www.leica-geosystems.com