CONSTRUCTION POSITIONING SYSTEMS

Trimble

SUPERIOR LAYOUT CONTROL

Trimble offers a portfolio of construction positioning solutions specifically designed to meet your construction layout and measurement needs. Whether your projects are commercial or residential, these powerful tools let you take control so you can perform your layout tasks more efficiently. As the industry-leading solution provider for construction layout and alignment projects, the Trimble family of products helps you get the job done right, on time, and on budget:

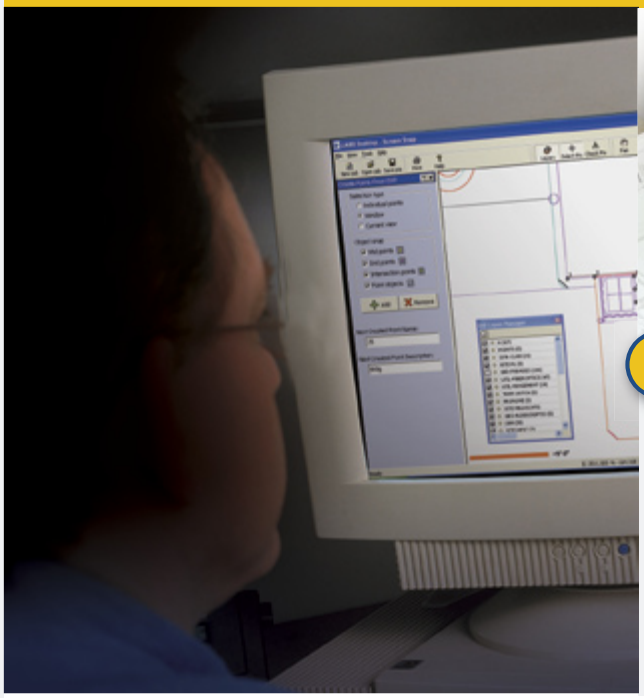
- LM80 Layout Manager
- SPS700 Robotic Total Station
- 5605 Robotic and Servo Total Stations
- TS515 Total Station
- TS415 Total Station

These easy-to-use construction products offer outstanding features—fast, flexible, accurate and cost-effective—and share many of the same benefits.

MAXIMUM APPLICATION FLEXIBILITY

Trimble's construction positioning products offer major advantages over traditional methods in a wide variety of applications. Increase your efficiency when you perform numerous construction layout and measurement tasks using a total station alone or with the LM80 Layout Manager.

TRIMBLE PRODUCTS GIVE YOU CONTROL TO WORK INDEPENDENTLY. THE RESULT: INCREASED PRODUCTIVITY, ACCURACY, RELIABILITY, AND CONVENIENCE.



1 ENTER BLUEPRINT

Easily enter your blueprint dimensions into the LM80 to build a digital replica of your project and a portable reference for your layout tasks.

LAYOUT OF CONTROL POINTS

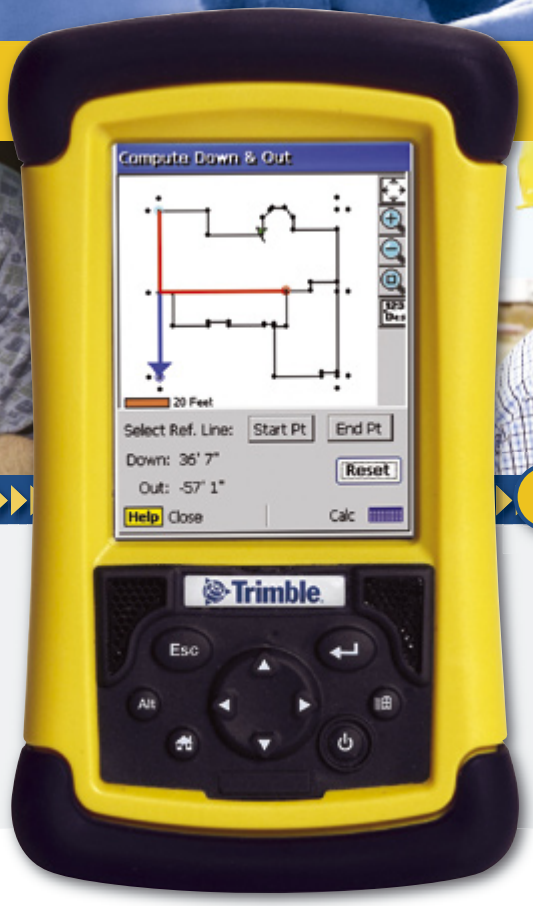
Handle control points—on or offset to construction lines—faster, and more cost-effectively than using a third party.

CHECKING OR TYING INTO PROPERTY BOUNDARIES

Forget about tapes or calling a third party when tying into boundaries. Use the LM80 to make minor adjustments to the building position as needed without waiting or paying large fees.

LAYOUT OF EXCAVATION LINES

Lay out all lines from one reference location with no string lines, transits or theodolites. You don't need to set up over each control point, making Trimble's construction positioning systems much faster and easier to use.



2 SETUP

Use the LM80 with a construction total station at your jobsite to guide you through the equipment set up, making it ready for the building layout based on the blueprint you entered.

3 LAYOUT

The LM80 graphically guides you through your building layout, navigates you to your critical building alignments, and creates as-built records of all layout points. You can also use the LM80

to inspect the location of building elements once they are installed.

LAYOUT OF CONCRETE FORMS AND ANCHOR BOLTS

Lay out complex concrete forms or anchor bolts from any location by tying into any two control points.

The application software makes this process simple for even novice users, making layout straightforward and much more productive.

AS-BUILT CHECKS

Check reference lines and dimensions faster, easier and more precisely. Direct reflex capabilities even allow one-person operation on as-built checks.

LAYOUT OF CONTROL LINES ON CONCRETE PAD FOR SUBCONTRACTOR USE

Perform control line layout faster and more accurately than with tapes and optical products. It's easy to work around obstructions, and there's no need to set up on each line.

LIGHT TOPOGRAPHICAL MEASUREMENTS

For applications such as cut/fill balance, ditch your taped grid and laser! You'll increase your speed and cut costs by measuring in 3D.

TOTAL STATIONS AT WORK

Get the job done fast and under budget! Compared to traditional methods, Trimble products quickly help you measure and position. Setup is easier than ever—just position the total station where you can easily see the layout area, measure two control points, and start to lay out all excavation lines, column lines, concrete forms, and anchor bolts from a single location. Plus, the LM80's graphical display makes creating and staking the layout points simple.

Flexible contractor application programs let you solve any layout and measuring challenges on your jobsite. And because Trimble products are designed for a contractor's needs, the logical, easy-to-follow workflow maximizes the range of applications…and the payback.

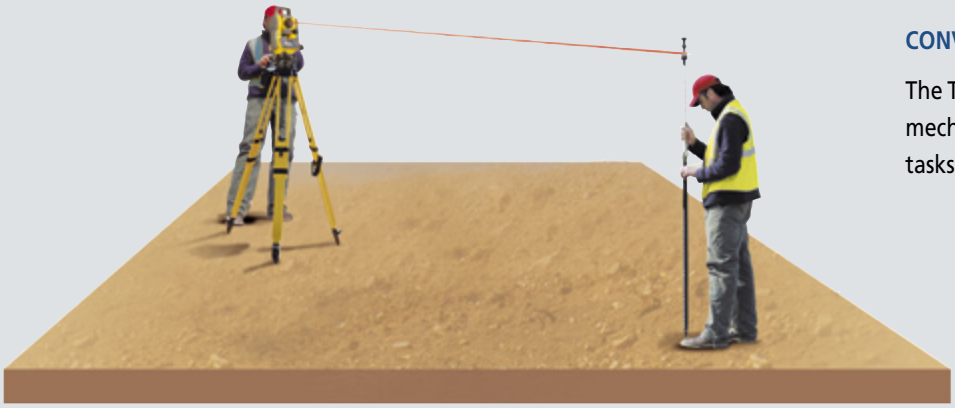
Trimble construction layout products feature compensated angle measurements and exceptionally accurate distance measurement so you can focus on getting the job done without worrying about accuracy.

Getting immediate results for work you previously may have outsourced makes Trimble products your cost-effective choice. And with tools designed for tough jobsite conditions, you'll minimize

downtime and repair costs. Trimble construction layout product features add up to deliver outstanding cost savings and productivity.

ROBOTIC OPERATION

The SPS700 and 5605 Robotic Total Stations track you and continuously update measurement information at the pole, increasing productivity by 80% over a conventional, mechanical system.

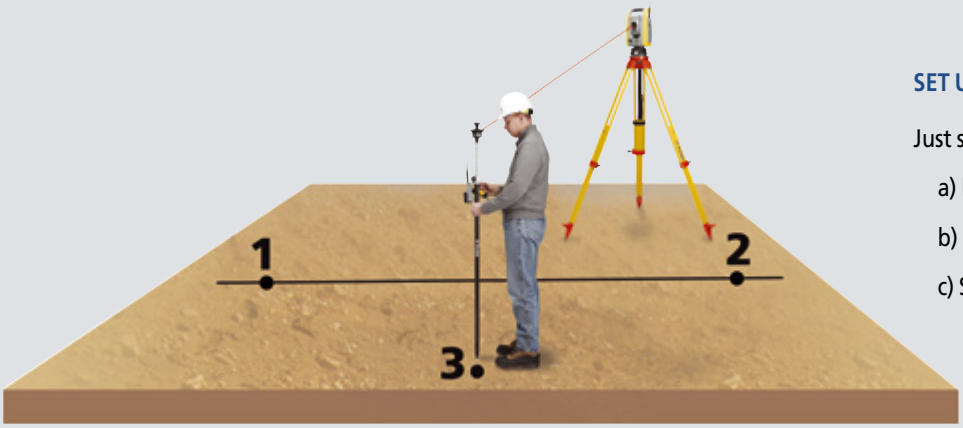


CONVENTIONAL OPERATION

The TS515 and TS415 total stations are conventional, mechanical systems which helps you carry out layout tasks efficiently.

REFLECTORLESS OPERATION

The SPS700, 5605 and TS515 total stations feature direct reflex (DR) reflectorless distance measuring capability for one-person operation with no need for a prism to measure difficult or dangerous-to-reach places.



SET UP ANYWHERE—TOTAL STATION AND LM80

Just set up at a convenient location and:

a) Measure control point 1.

b) Measure control point 2.

c) Start to lay out point 3!

CONSTRUCTION TOTAL STATIONS

TRIMBLE SPS700
ROBOTIC TOTAL STATION

The advanced SPS700 is our fastest robot yet. Its increased speed and long battery life give you even more efficient layout and one-person operation than ever!

TRIMBLE 5605
ROBOTIC TOTAL STATION

Robotic operation lets you work 80% more efficiently during layout with one less person for increased productivity and reduced personnel costs.

POWERFUL FEATURES FOR IMPROVED PRODUCTIVITY

MAXIMUM FLEXIBILITY AND COST SAVINGS

Application programs let you set up anywhere faster and perform most jobsite layout and measurement tasks yourself. You'll eliminate the need for outsourcing and lower your costs.

EASY TO LEARN AND USE

Easy-to-follow user interface shortens the learning curve and speeds operation. With minimal training, you'll find you don't need to be a surveyor to use these total stations.

Easy-to-use software functions and advanced distance measurement technology help you get the job done faster.

MINIMIZE MANPOWER

Handle multiple jobsite applications yourself. Enjoy the power to perform your layout by working from control points or offset points located anywhere on the site.

ACCURATE OVER THE ENTIRE WORKSITE

Compensated angle measurements provide excellent angle and distance measurement accuracy.

TRIMBLE 5605 SERVO TOTAL STATION

Servo operation lets you work 30% more efficiently during layout. The Tracklight™ indicator, a visible guide that quickly helps guide the person on the rod to the correct alignment.

"Endless" servo drives automatically turn to the correct alignment or layout direction for faster measurements and easy, comfortable operation.

SPECTRA PRECISION LASER TS515 AND TS415 MECHANICAL TOTAL STATIONS

The TS415 features large graphical display and alphanumeric keypad. Easy-to-learn graphical instruction of onboard programs and full alphanumeric keypad let you quickly enter information or layout dimensions for efficient equipment use.

NO MISTAKES

With Trimble construction positioning systems, storage of all relevant data and built-in checks for all layout functions clearly display any errors to virtually eliminate mistakes.

LOW REPAIR COSTS

Withstands harsh jobsite conditions and minimizes repair costs.

NO DOWNTIME

Exceptionally long battery life and easy setups increase your productivity by saving you time and money.

EASY SETUPS

Application programs let you set up anywhere, without worrying about positioning over a control point.

User-friendly application menu gives you quick access to the layout and measuring functions you need. One-touch measure makes measurement faster than ever!

TRIMBLE LM80 LAYOUT MANAGER

BIG CAPABILITIES IN A SMALL PACKAGE

The Trimble® LM80 pocket-sized, personal Layout Manager lets your carry, manage, work with, and lay out your jobsite blueprint, regardless of the method and instrumentation you use. This convenience, combined with the power of a common user interface, specialized software, and built-in Construction Master® Pro Calculator makes the LM80 a revolutionary tool.

Using the LM80, you can:

- input blueprint dimensions to build a digital replica of the layout plan
- guide the layout of the major points, add string dimensions on the print or calculate diagonals or angles
- reduce your reliance on third party specialists
- organize and standardize all layout activity for all layout equipment currently in use
- cut training costs
- increase flexibility if one instrument is unavailable—easily swap it out for another!

When attached to the Trimble construction total stations, the LM80 significantly increases accuracy, reliability, and productivity.

Based on Microsoft® Windows®, Mobile™ 5.0 software, the LM80 can support the wide range of application software available today for Windows mobile devices. Built-in functions include: Microsoft Outlook® with contacts, email, calendar and tasks, as well as versions of Microsoft Word® and Microsoft Excel®.

RUGGED DESIGN

Withstands multiple drops of up to 1 meter (3 feet) and can be submerged in or cleaned with water. Lowers repair costs.

GRAPHICAL DISPLAY AND ENTRY OF BLUEPRINTS AND LAYOUT POINTS

Store multiple jobs more reliably with less dependence on paperwork. Quickly and easily check for blueprint errors.

COMMON INTERFACE FOR MANY LAYOUT INSTRUMENTS

Lower learning curve, lower training costs, faster integration with your current instruments and methods.

COMPUTERIZED COMPUTATIONS FROM BLUEPRINT

Quickly and easily add stringline dimensions, calculate areas, diagonals, etc. with no errors.

LONG BATTERY LIFE

Operates for an entire workday on a single charge.

LM80 DESKTOP SOFTWARE

The LM80 desktop software is an easy-to-use support tool for the LM80 or construction total station. Featuring an intuitive graphical user interface, the LM80 Desktop makes it easy to create points quickly from a digital DXF drawing, upload them to the LM80, or send them directly to a total station for onboard layout.

Bright Graphical User Interface: Direct key access to common functions means a lower learning curve and minimal self-training.

Standard View Controls: Common user interface features Pan, Zoom Window, Zoom In, Zoom Out controls designed for anyone with a limited understanding of CAD.

Multiple Point Selection: Individual, Window, Current View point selection techniques give you maximum control to select points.

THE LM80 DESKTOP IS THE IDEAL COMPANION SOFTWARE FOR ANYONE WORKING WITH VERY LARGE OR COMPLEX DRAWINGS.

CONSTRUCTION MASTER® PRO CALCULATOR

The popular, industry-standard calculator from Calculated Industries, Inc. is an integral part of the LM80 software for your convenience to further increase your accuracy and productivity.

Find all your favorite Construction Master Pro programs, such as the Square-Up function for calculating diagonal distances.

SPECIFICATIONS

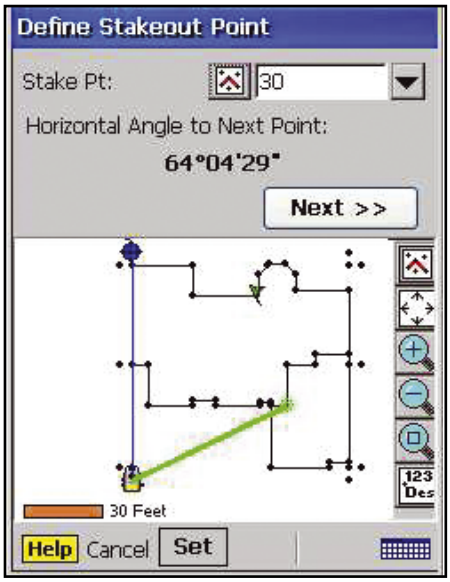
PERFORMANCE SPECIFICATIONS	TRIMBLE SPS700 ROBOTIC TOTAL STATION	TRIMBLE 5605 ROBOTIC AND SERVO TOTAL STATION	TRIMBLE 5605 SERVO TOTAL STATION	SPECTRA PRECISION TS515 MECHANICAL TOTAL STATION	SPECTRA PRECISION TS415 MECHANICAL TOTAL STATION
Type		Robotic or Servo	Servo	Conventional mechanical	Conventional mechanical
ANGLE MEASUREMENT					
Accuracy (Standard deviation based on DIN 18723)	Horizontal: 5" (1.5 mgon) Vertical: 2" (0.6 mgon)	5" (1.5 mgon)	5" (1.5 mgon)	5" (1.5 mgon)	5" (1.5 mgon)
Angle reading increments	Standard: 1" (0.1 mgon) Tracking: 2" (0.5 mgon)	1"/2" (0.1 mgon/0.5 mgon)	1"/2" (0.1 mgon/0.5 mgon)	1"/5"/10" (0.2 mgon/1 mgon/2 mgon)	1"/5"/10" (0.2 mgon/1 mgon/2 mgon)
Automatic level compensator		Dual-axis compensator	Dual-axis compensator	Dual-axis compensator	Dual-axis compensator
DISTANCE MEASUREMENT					
Prism Mode					
Standard Measurement	+ 3 mm + 2 ppm (0.01ft + 2 ppm)	±3 mm + 3 ppm (0.01 ft +3 ppm)	±3 mm + 3 ppm (0.01 ft +3 ppm)	±3 mm + 2 ppm (0.01 ft +2 ppm)	±3 mm + 2 ppm (0.01 ft +2 ppm)
Tracking	+ 10 mm + 2 ppm (0.032 ft + 2 ppm)	±10 mm + 3 ppm (0.032 ft +3 ppm)	±10 mm + 3 ppm (0.032 ft +3 ppm)	±10 mm + 3 ppm (0.032 ft +3 ppm)	±10 mm + 2 ppm (0.032 ft +2 ppm)
Direct Reflex					
Standard Measurement	+ 3 mm + 2 ppm (0.01 ft + 2 ppm)	±3 mm + 3 ppm (0.1 ft +3 ppm)	±3 mm + 3 ppm (0.1 ft +3 ppm)	±5 mm + 2 ppm (0.016 ft +2 ppm)	N/A
Tracking	+ 10 mm + 2 ppm (0.032 ft + 2 ppm)	±10 mm + 3 ppm (0.032 ft +3 ppm)	±10 mm + 3 ppm (0.032 ft +3 ppm)	±5 mm + 3 ppm (0.016 ft +3 ppm)	N/A
Shortest Possible range	0.2 m (0.65 ft)	1.5 m (4.9 ft)	1.5 m (4.9 ft)		
MEASURING TIME					
Prism Mode					
Standard Measurement	1.2 s	<2.0 s	<2.0 s	1.3 s	1.6 s
Tracking	0.4 s	0.4 s	0.4 s	0.5 s	1.0 s
Direct Reflex Mode					
Standard Measurement	1-5 s	3 - 5 s	3 - 5 s	1.6 s	N/A
Tracking	0.4 s	0.4 s	0.4 s	0.8 s	N/A
RANGE (AT STANDARD CLEAR*)					
Measurement to prism					
1 Mini Prism		1,000 m (3,300 ft)	1,000 m (3,300 ft)	1,000 m (3,300 ft)	1,000 m (3,300 ft)
1 Prism (50 mm dia.)	2,500 m (8,202 ft) Long Range mode 5,500 m (18,044 ft) max range	2,500 m (8,200 ft)	2,500 m (8,200 ft)	2,300 m (7,500 ft)	2,300 m (7,500 ft)
3 Prisms		3,500 m (11,480 ft)	3,500 m (11,480 ft)	3,000 m (9,800 ft)	3,000 m (9,800 ft)
RANGE (AT STANDARD CLEAR*)					
Range Direct Reflex measurement					
Kodak Gray (18% reflective)	>300 m (984 ft)	>200 m (656 ft)	>200 m (656 ft)	70 m (229 ft)	N/A
Kodak Gray (90% reflective)	>800 m (2625 ft)	>600 m (1,968 ft)	>600 m (1,968 ft)	100 m (328 ft)	N/A

GENERAL SPECIFICATIONS					
Optical Plummet	Optical 2.4x	Optical 2.4x	Optical 2.4x	Optical 2x	Optical 2x
Telescope					
Magnification	30x	26x	26x	26x	33x
Aperture	40 mm (1.57 in)	40 mm (1.57 in)	40 mm (1.57 in)	40 mm (1.57 in)	45 mm (1.77 in)
Illuminated Crosshair	Variable (10 steps)	No	No	Yes	Yes
Display Screen	No	LM80	LM80	Backlighted graphical LCD 128 x 32 pixels	Backlighted graphical LCD 128 x 32 pixels
Operating Temperature	-20 °C to + 50 °C (-4 °F to + 122 °F)	-20 °C to +50 °C (-5 °F to +122 °F)	-20 °C to +50 °C (-5 °F to +122 °F)	-20 °C to +50 °C (-5 °F to +122 °F)	-20 °C to +50 °C (-5 °F to +122 °F)
Battery					
Type	Internal Li-Ion battery pack, rechargeable	External NiMH battery pack, rechargeable	External NiMH battery pack, rechargeable	Internal NiMH battery pack, rechargeable	Internal NiMH battery pack, rechargeable
Charge time	6-hour charging time	12-hour charging time	12-hour charging time	2-hour charging time	2-hour charging time
Operating time	4-6 hours on a single battery	Operating time: Approx. 9 hours	Operating time: Approx. 11 hours	Operating time: Approx. 27 hours	Operating time: Approx. 27 hours
System Weight	5.15 kg – 5.25 kg (11.35 lb – 11.57 lb)	Instrument: 7.5 kg (16.5 lb) Powerpack: 6.8 kg (15 lb) Remote Pack: 3.6 kg (8.1 lb)	Instrument: 7.5 kg (16.5 lb) Powerpack: 6.8 kg (15 lb)	11.3 kg (25 lb)	11.3 kg (25 lb)
Class II laser product label	Yes	No	No	No	No

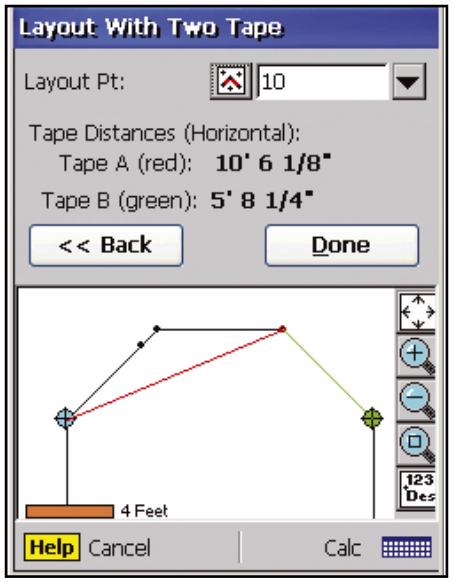
DATA TRANSFER AND RECORDING					
Memory Capacity	C / V24 interface	Via LM80	Via LM80	Recording; internal data memory 10,000 data lines, 32 jobs	Recording; internal data memory 10,000 data lines, 32 jobs
Data input/output	RS232 C / V24 interface	RS232 C / V24 interface	RS232 C / V24 interface	RS232 C / V24 interface	RS232 C / V24 interface
LM80 Interface	Primary	Primary	Primary	Optional	Optional

** Standard clear: No haze, overcast or moderate sunlight with very light heat shimmer. Range and accuracy are dependent on atmospheric conditions and background radiation.*

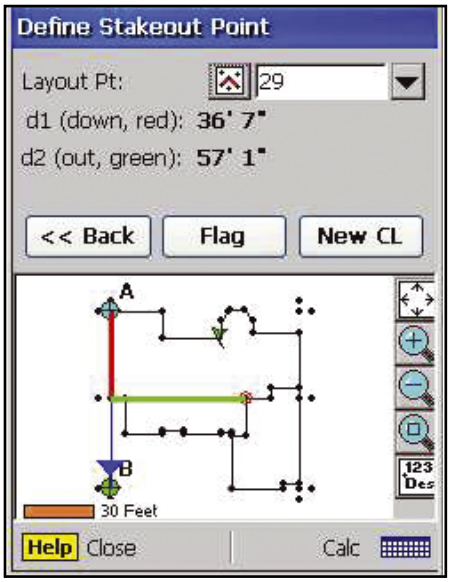
TRIMBLE LM80 LAYOUT MANAGER SPECIFICATIONS
Microsoft Windows Mobile 5.0 software
200 MHz Intel Xscale Processor
128 MB nonvolatile NAND Flash storage
Sunlight-readable color TFT display (240 x 320 pixel) with front light
Over 15 hours of continuous operation at 20 °C (68 °F)
2 x Compact Flash slot expansion
Standard 9-pin RS-232 and USB ports
NiMH rechargeable battery pack
Weight: 490 g (17oz)
Operating temperature: -30 °C to +60 °C (-22 °F to +140 °F)
IP67 dust and waterproof (temporary immersion)
Survives multiple drops up to 1 m (3 ft)



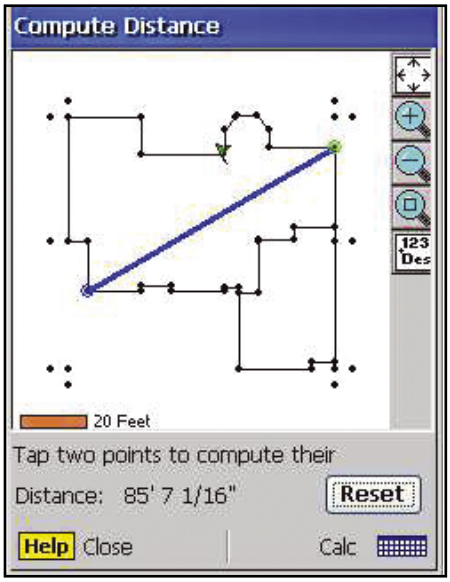
Construction Total Stations are very easy to use—finally!



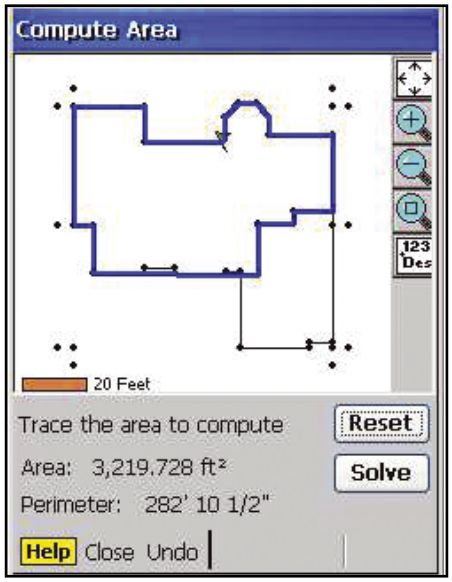
Easily check or lay out points using the LM80 with tapes.



Get the "down-and-out" information at the touch of a button.



Quickly get diagonals for easy checks.



Simple area calculations used to help calculate materials.

Trimble

PRODUCTIVITY IS...

Design
software that helps you prepare data for use on the construction job site.

Grade
control that is faster, more accurate and minimizes rework.

Check
site measurement and stakeout for non surveyors on the job site.

Manage
your assets to improve efficiency, safety, and theft recovery.

Build
with precise laser and positioning for faster layout, leveling and alignment.

Productivity is the key to profitability...getting the job done faster with less machine time and personnel. Only one company can support your productivity with the broadest, deepest and most advanced construction solutions in the industry. Productivity is... Trimble.

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