RICS BOOKS

in assocation with SURVEYSystems LIMITED

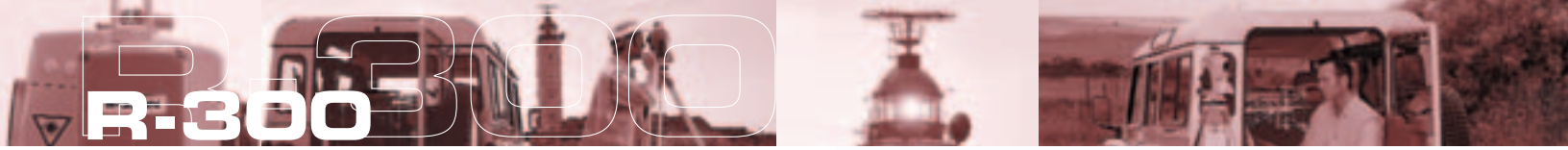
t: 0870 333 1600
e: mailorder@rics.org
w: www.surveyors-equipment.com

PENTAX

Total Surveying Solutions

R-300 Series Total Station

Don't Close your eyes on Efficiency



Just Compare us to others

Pentax, a name you have known for a long time. But, how well do you know our products, innovations and services ? The requirements on surveying have changed dramatically over the past few years. Shorter set-up times, optimum and maximum productivity are what the market demands. We want you to compare !

Innovation in the Details

Pentax never stops searching for ways to make things work better. Just choose any R-300 Total Station and try a few simple tests.

Easy and Quick set-up

- **Electronic vial** easy-to-operate through function keys.
- **Laser plummet**
  Easy to center over a set up point and step-by-step adjustable intensity of the plummet laser point to critical lighting conditions.


Construction


Inaccessible points


Industrial applications

Standard configuration

- Battery pack
- Battery charger
- Plumb Bob
- A set of tools
- Rain cover
- Carrying case
- Manual

2nd display standard on R-322(N) and R-322, the other models have 1 display. The 2nd display (TA 04) is optional .

4 choices, one standard of excellence

Type	Measurement accuracy	
R-322 / R-322N	2″	0.6 mgon
R-323 / R-323N	3″	1.0 mgon
R-325 / R-325N	5″	1.5 mgon
R-315 / R-315N	5″	1.5 mgon
R-326	6″	1.9 mgon
N = prismless		

Smart charger

R-300

Efficient in the field

Handy ergonomic handgrip

Easy-to-target collimator

Prismless Auto Focus EDM
Reflective tapes may also be used as targets

- **Auto Focus [World First Triple Focusing System]**
- **World First Dual Prismless Mode EDM [90 / 180m]**
- **Telescope with 30x magnification**
- **Eye-safe Visible Laser pointer**

Absolute Encoder eliminates the need for indexing after power-up, even after shutdown of the instrument. This results in reduced likelyhood of errors.

Dual Axis Compensator guarantees perfect horizontal and vertical alignment and performs fine leveling.

Automatic Atmospheric Correction

Indicator LED for reflectorless measurement
The green LED lightes up when the laser pointer is activated.
The LED is switched on until the reflectorless measurement is achieved.

Ni-MH Battery
With the compact standard camcorder Ni-MH battery (*rechargeable DC6V*), the R-300 user can go anywhere to measure for up to a whole working day (6 - 12 hours) without having to depend on a power source.

Large graphic display (Large 20 character x 8 line graphic display)
Alphanumeric Keyboard (10 easy-to-operate keys)

Large Storage Capacity 7.500 Points Internal Memory
PSF software on-board (Data Collection Software)
Data upload and download through RS-232C

Compact and Lightweight (11.5 lbs / 5.2 kg - 12.1lbs / 5.5 kg battery incl.)
Highest standard in Waterprotection IPX6 (Splash and Dust proof, following the IEC 60529 standard)

Laser plummet intensity adjustable

Electronic vial for quick set-up

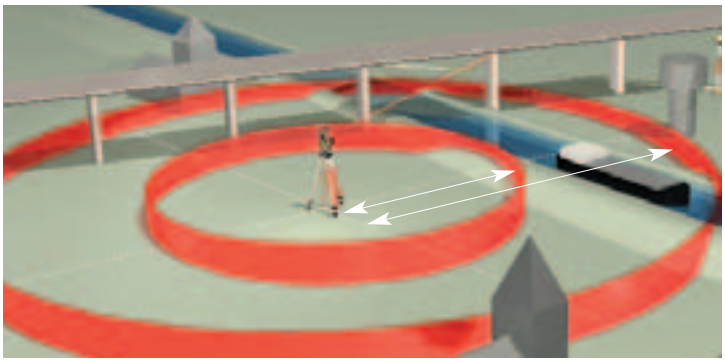
Ocular SB12

Declinator SC6

Powerful performance, simple design

Versatile new R-300 Total Stations from Pentax handle measuring distances from **90 m** up to **180 m** without prism with equal ease.
In many applications, R-300 can improve inspection efficiency up to 45 %.
The R-300 Total Stations are available in five configurations, R-322(N), R-323(N), R-325(N), R-315(N) and the R-326 with angle accuracy's of 2", 3", 5" and 6".
The R-300 series of Total Stations offers major features in an economical package. The R-300, an affordable High Performance Total Station.

One Flexible Total Station for many measurement applications



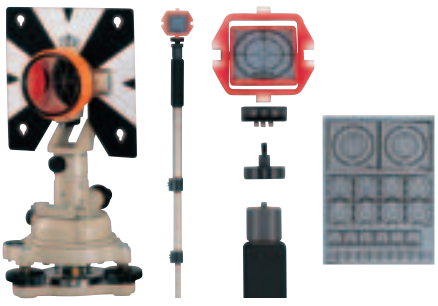
Reflectorless distance measurement 90 up to 180 m

The R-300 Total Stations from Pentax use one Visible Laser that operates in a variaty of measurement modes. This allows you to perform a wide range of measurement tasks with a cost effective, high performance mechanical Total Station.

R-300 …because your daily jobs are not the same !

Wide selection of Measurement Modes:

- Non Prism, 90 m or up to 180 m - your choice !
- Visible Laser dot
- Reflective Sheet
- Mini Prism
- Single Prism



The desired mode can be activated by a simple switch on the function key and allows point determination and distance measurement with or without prism.

Functionality with the next generation reflectorless EDM

The Innovative Dual Prismless Mode EDM measuring system
Depending on the job, two user selectable laser mode offer specific advantages when it comes to solving different measuring problems.
Think how often you find it impossible to get a measurement to a target-point on an inaccessible target with a conventional Total Station.

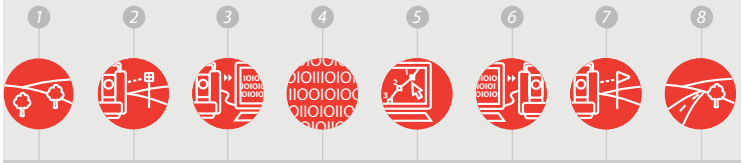
Whether you are performing Cadastral survey or Construction survey, pipelines, facade or interior measurement Pentax understands the challenges.
Quickly select the desired Laser mode on the function key of the R-300 and you can measure objects up to 180 meters away without a prism.

You will see that R-300 Total Stations are an efficient way to add value to your surveying tasks.

R-300, an affordable High Performance Total Station

Pentax Integrated surveying solutions

From initial Concept to Completion, Pentax enables Integrated collaboration between field and office for complete surveying solutions.



1. *New project*
2. *Surveying. Measuring and collecting data in the field with the R-300 Series prismless or with prism and the onboard PSF software*
3. *Quick download to PC with data exchange software DL-01*
4. *Reading data into the CAD+GIS application Pythagoras*
5. *Analyzing and Processing the data into design*
6. *Data transfer*
7. *Stake out work*
8. *New project prepared and realized (new road)*

INTEGRATED COLLABORATION IN SURVEYING

DL-01 Data transfer software Features

- DL-01 supports upload and download of datafiles between PENTAX surveying instruments and PC's, through RS-232C cable, as well as providing dataconversions.
- DL-01 fully utilizes the power of the advanced capabilities inherent in Windows™. DL-01 operates under Windows™ 95, 98, 2000 & NT.
- Data can be converted into the following formats:
  Pythagoras files, DXF, JS-Info, TDS, SDR, TAB separated ASCII, DC -1Z, 3 User Definable Formats and various other accepted formats.

Impact
easiness of operation

R-300 comes equipped with full-featured PSF-onboard software that can help you handle your most difficult survey jobs. This powerful software features an easy-to-use operator interface that guides you through setup and survey routine execution.
The R-300 is controlled via five keys and a menu-driven user interface. Via a single keystroke the 8 line graphic display can show angles plus distances, reduced distances (HD, VD) or coordinate values.

PSF Software
Special functions screen 2

PSF Software
Distance stake-out

PSF Software
Coord. stake-out (Angle compare)

PSF Software
Point info

PSF Software
Coordinates measure

Special Functions – PSF Software

Data Storage	Job Name, Station Point information, Point number, HA, VA, Slope Distance and feature code can be stored on the internal memory.
Distance Stakeout	Deviation between input design values (specified distance) and distance to the prism is displayed.
RDM Measurement	Calculates the Horizontal distance, Slope distance, Difference in height and percentage slope between measured points
Coordinates	X,Y,Z Coordinates of measured points are automatically calculated and can be stored on internal memory with Point Number and Feature Code.
Offset Shots	Offsets can be measured manually and input when the prism cannot be positioned because of an obstacle in the way.
Coordinate Stakeout	"Stakeout Point Coordinates" can be staked out in three dimensions. Based on known Station point coordinates and backsight coordinates or bearing, Horizontal Angle, Horizontal Distance and Vertical Distance are automatically calculated as design values. The differences between the measured values and design values are displayed. Station, Backsight and Stakeout Point Coordinates can be stored on internal memory for easy recall and faster setting out.
REM Measurement	The height of a remote target object, Overhead Power Lines, Bridges, Buildings etc. can be calculated by measurement to a reference point (reflectorless instruments only), reflective sticker or prism placed directly below the target object.
Resection	Coordinates of new Station Point can be calculated and stored on internal memory using two or three known coordinated points that can be sighted (three points) or measured (two points) from the new Station Point.

R-300 Key features

Key Capabilities	The Pentax Benefits for Users
✔ Standard Laser plummet	Enables quick centering
✔ Electronic Vial	Reduces set-up time
✔ Dual axis Compensator	Corrects both vertical and horizontal angles for instrument mislevel
✔ Absolute Encoder	Keeps the Absolute Angle Position even after shutdown of the instrument
✔ Dual Reflectorless EDM Selection Mode	Enables Quick selection of the desired Laser mode allowing you to measure targets up to 180 m away without a prism.
✔ Visible Laser Pointer	Provides quick and easy aiming in shaded environments
✔ Full Alphanumeric keyboard	Enables you to quickly and easily enter numbers, letters and special characters
✔ Triple Focusing System	Allows users to perform more measuring with eye-saving ease of aiming
✔ Splash and dust proof IPX6	Eliminate down time due to bad weather
✔ Standard Camcorder Battery	Offers the best price-performance ratio and eliminates the costly special batteries

R-300 SERIES Specifications

	R-322 (N)	R-323 (N)	R-325 (N)	R-315 (N)		R-322	R-323	R-325	R-315	R-326
Telescope										
Image	Erect									
Magnification	30 X									
Resolving power	3 sec.									
Optical aperture	45 mm (EDM aperture: 45 mm)									
Field of view	1°30′ (2,6%)									
Minimum focus	1.0 m									
Recticle illumination	Intensity settings: 10 steps									
Auto focus / Power focus	Yes (and Manual)									No (Manual)
Method	Phase differential									-
Power	Main battery									-
Pointer	Visible laser									
EDM										
Type	Visible Laser									
Laser class	IIIa (3R) / II (2)							II (2)		
Range - normal - max. m										
NP	70							-		
NP Long	150							-		
Reflector sheet	600									
Mini Prism	1100									
Single Prism	3400		3000			3400		3000		2000
Triple Prism	4500		4000			4500		4000		2800
Range - good - max. m										
NP	90							-		
NP Long	180							-		
Reflector sheet	800									
Mini Prism	1600									
Single Prism	4500		4000			4500		4000		2800
Triple Prism	5600		5000			5600		5000		3500
Accuracy - input PPM										
NP	±(5mm+2ppm)	±(5mm+2ppm)	±(5mm+3ppm)					-		
Sheet / prism	±(2mm+2ppm)	±(3mm+2ppm)	±(5mm+3ppm)			±(2mm+2ppm)	±(3mm+2ppm)		±(5mm+3ppm)	
Accuracy - Auto PPM										
NP	±(5mm+10ppm)							-		
Sheet / prism	±(2mm+10ppm)	±(3mm+10ppm)	±(5mm+10ppm)			±(2mm+10ppm)	±(3mm+10ppm)		±(5mm+10ppm)	
Measuring time										
Fine mode	2.5 sec. (5.0 initial)									
Normal mode	1.5 sec. (4.0 initial)									
Tracking mode	0.4 sec. (3.0 initial)									
Minimum count										
Fine mode	0.1 mm									
Normal mode	1 mm									
Tracking mode	10 mm									
Target selection										
Non Prism	0 offset							-		
Reflector sheet	0 offset / +99 ~ -99 offset									
Prism	0 offset / -30 offset / +99 ~ -99 offset									
Angle Measurement										
Type	Absolute Rotary Encoder									
Method	Horizontal: 2 sides / Vertical: 2 sides									
Accuracy (DIN18723)	2″	3″	5″			2″	3″	5″		6″
Minimum count	1″									
Compensator	Liquid reflecting									
Range	± 3 minutes									
Method	Dual Axis									
Corrections	Triple		Dual				Triple		Dual	
Display / keyboard										
Display Type	Graphic LCD / 20 characters x 8 lines / 240 x 96 pixels									
Quantity	2		1 (2nd optional)			2		1 (2nd optional)		
Keys	22 each (12 numeric / 5 function / 5 special)									
Display back light	Intensity settings: 10 steps									
Physical										
Tangent screws	2 speed		1 speed			2 speed		1 speed		
Vials										
Plate (electronic)	30″ / 1 div.									40″ / 1 div.
Circular	8′ / 2 mm									
Plummet	Visible laser									
Accuracy	± 0.8 mm (instrument height 1.5 m)									
Intensity	10 steps									
Base		Tribrach		Fixed			Tribrach		Fixed	Tribrach
Working temperature	-20° C ~ +50° C / -4° F ~ +122° F									
Water protection	IPX6									
Tripod thread	5/8 x 11									
Instrument dimensions	177 (W) x 343 (H) x 177 (L) mm									
Inst. weight (with battery)		5.7 kg / 12.6 lbs		5.5 kg / 12.1 lbs			5.7 kg / 12.6 lbs		5.5 kg / 12.1 lbs	5.7 kg / 12.7 lbs
Case dimensions	268 (W) x 442 (H) x 465 (H) mm									
Case weight	3.8 kg / 8 lbs									
Battery	Varies by country (standard camcorder battery, Ni-MH rechargeable DC6V)									
Charger	Varies by country (charging time 130 min)									
Internal Memory	7,500 Points (Measured and/or Stake Out)									

* Designs and specifications are subject to change without notice. - Printed in Belgium - © PENTAX 2002 - **AS 591304 - SURVEY/01/11/02**

PENTAX Precision Co., Ltd.
2-5-2, Higashi-Oizumi,
Nerima-ku,
Tokyo 178-8555, Japan
Tel: +81 (3) 5905 1222
www.pentax.co.jp/ppc
Visit our website **www.pentaxR300.com**

Pentax USA Inc., USA
35 Inverness Drive East,
Englewood,
Colorado 80112,
USA
Tel: +1 (303) 728 0351

CAUTION
LASER RADIATION - DO NOT STARE INTO BEAM
620-690 nm/0.95mW max.
CLASS II LASER PRODUCT
Laserclass II, conform FDA 21 CFR Ch. 1 § 1040

DANGER
LASER RADIATION - DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENT INTO SUNLIGHT
620-690 nm/4.95mW max.
CLASS IIIa LASER PRODUCT
Laserclass IIIa, conform FDA 21 CFR Ch. 1 § 1040

Japan Surveying Instruments JSIMA Manufacturers' Association
Member symbol of the Japan Surveying Instruments Manufacturers' Association representing the high quality surveying products.

PENTAX for your precious moments