



**PENTAX®**  
Total Surveying Solutions

R-322NX R-322EX  
R-323NX R-323EX  
R-325NX R-325EX  
R-335NX R-335EX  
R-315NX R-315EX  
R-326EX



**Pentax R-300X series**  
**Stretching the limits...**

# R-300X

## Applications:

- Surveying
- Construction
- Industrial applications
- Free Station
- Stake Out
- Reference Line / Arc
- Area Calculation
- Tie Distance
- Height transfers
- Inaccessible Points

## Precision at the speed of light

The R-300X-series from Pentax incorporates two precise user selectable lasers, made for high inspection throughput and improved measurement efficiency in any possible job. This makes the Pentax R-300X Total Station a versatile measuring system that brings you and your customers important cost savings. These features, together with a measurement time of 0.4 sec in tracking mode and 1.2 sec in quick mode, contribute to an excellent productivity of Pentax R-300X total stations.

## Simple operation

All functions are initiated from just five keys. A function that keeps the operation intuitive and logical. Easy-to-use alphanumeric keys (10 keys) allow you to enter quickly specific characters, numbers and other information.



## Large memory

The on-board memory of 18.600 measuring points (XYZ) allows you to handle efficiently any measurement and inspection tasks.

Max. 2.000 measuring points (XYZ) can be recorded in one job file. The user can make up to 20 job files.





# Optimal configuration, optimal productivity



- **Four classes of angular accuracy**  
2" (0.6mgon); 3" (1mgon), 5" (1.5mgon) and 6" (1.9mgon)
- **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 / 270m]
  - Telescope with 30x magnification
  - Visible Laser pointer
- **Automatic Atmospheric Correction**
- **Indicator LED for Laser beam**
- **Ni-MH Battery**  
With the compact standard camcorder Ni-MH battery (rechargeable DC6V), the R-300X 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 for simple operation.
- **Electronic vial** easy-to-operate through function keys.
- **Incorporated date clock** for more efficient job management.
- **Alphanumeric Keyboard**  
(10 easy-to-operate keys)
- **Compact and Lightweight**  
(12.1lbs / 5.5kg - 12.6 lbs / 5.7kg battery incl.)
- **Dual Axis Compensator** guarantees perfect horizontal and vertical alignment and performs fine levelling.  
Triple Axis Compensator for R-322 and R-323 models (NX and EX).
- **Highest standard in Waterprotection IP56**  
(following the IEC 60529 standard).
- **Laser plummet** for easy and quick set-up  
Makes it easy to center over a set up point and step-by-step adjustable intensity of the plummet laser point to critical lighting conditions.

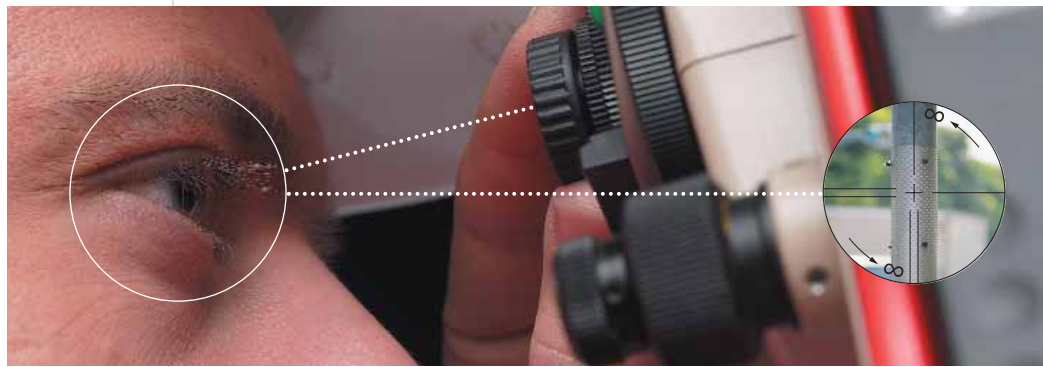


## R-300X Key features

- **On-board memory:** 18,600 points
- **Measurement time to prism/reflector sheet:** 0.4 sec in Tracking Mode and 1.2 sec in Quick Mode setting
- **EDM accuracy:**  $\pm (2+2\text{ppm})$  on all models, except R-326EX  $\pm (3+2\text{ppm})$
- **Date clock on all non prism models**
- **Reflectorless measuring up to 270m**
- **Single prism measuring** up to 4.500m (14,764 ft), with  $\pm (2+2\text{ppm})$  accuracy

## The noted Pentax features

- Autofocus (World First Triple Focusing System)
- 30x magnification of telescope
- Large, high resolution screen guarantees a clear display
- Intuitive program structure



## Standard configuration



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

\* 2nd display standard on R-322(N)X and R-322X, the other models have 1 display. The 2nd display (TA 06) is optional.

## optional accessories



MPU-5A/5B



MPU-20  
(Mini Prism Set)



MT-56



# Reflectorless Measurement Mode by Pentax

Innovative Dual Mode EDM Measuring system

No more obstacles on the construction site with Pentax R-300X. Simply select the desired laser mode by striking one of the five function keys and you can measure objects up to 270 meters away without a prism.

## Centralize data

The R-300X Total Stations incorporate a clock allowing time and date data to be recorded in the jobfile, making it possible for the user to effectively manage job history.

- Four classes of angular accuracy 2" (0.6mgon); 3" (1mgon), 5" (1.5mgon) and 6" (1.9mgon)
- > 11 models
- > two configurations
- > minimum count of 1"
- > FIT EVERY APPLICATION



## On-board software PowerTopoLite

R-300X comes equipped with full-featured PowerTopoLite software that helps you handle your most difficult survey jobs. This powerful software package features an easy-to-use operator interface that guides you through all measuring jobs. PowerTopoLite's architecture provides open access to a number of powerful integrated functions to solve any advanced surveying application.



## Reliability made by Pentax: Waterprotection

IP56

The R-300X complies with the most stringent international industry standards. It is designed and engineered to ensure accuracy and reliability under the harshest work conditions, at the same time protecting your investment. (The degree of protection against dust and water of the R-300X complies with the International Protection standard IP56 defined following the standard IEC 60529).

## Reliable Data Exchange with DL-01

Information is exchanged via a standard RS232 cable. DL-01 software supports all upload and download between PENTAX surveying instruments and PC's. DL-01 allows direct exchange of data from any software. It operates under Windows™ 95, 98, 2000 & NT and Windows XP. 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.





# R-300X Series Specifications

Reflectorless items are applicable to "NX" models only

	R-322NX R-322EX	R-323NX R-323EX	R-325NX R-325EX	R-335NX R-335EX	R-315NX R-315EX	R-326EX
<b>Telescope</b>						
Image				Erect		
Magnification				30 X		
Resolving power				3 sec.		
Optical aperture				45mm (EDM aperture: 45mm)		
Field of view				1°30' (2.6%)		
Minimum focus				1.0m		
Recticle illumination				Intensity settings: 10 steps		
Auto focus / Power focus			Yes (and Manual)			No (Manual)
Method			Phase differential			-
Power			Main battery			-
Pointer				Visible laser		
<b>EDM</b>						
Laser class	Visible Laser: Class II (2) / Class IIIa (3R) - long range mode in Reflectorless ("NX" models only)					Visible Laser: Class II (2)
Measurement range (Good condition)	1.5m - Normal range mode: 90m / Long range mode 270m ("NX" models only)					-
Reflectorless	1.5m - 600m (800m)					
Reflector sheet	1.5m - 1100m (1600m)					
Mini prism	1.5m - 3000m (4000m)					1.5m - 2000m (2800m)
1P	1.5m - 3400m (4500m)			200m - 4000m (5000m)		200m - 2800m (3500m)
3P	200m - 4500m (5600m)					
<b>Accuracy</b>						
Prism	±(2+2ppm x D)mm					±(3 + 2ppm x D)mm
Reflector sheet						
Reflectorless	1.5 to 200m: ±(5 + 2ppm x D)mm Over 200 to 270m: ±(7 + 10ppm x D)mm		1.5 to 200m: ±(5 + 3ppm x D)mm Over 200 to 270m: ±(7 + 10ppm x D)mm			-
At Auto-Atm. Correction	Prism, Ref.sheet: ±(2 + 10ppm x D)mm / Reflectorless: ±(5 + 10ppm x D)mm ("NX" models only)					±(3 + 10ppm x D)mm
Minimum count	Fine mode (0.1mm) Normal mode (1mm) Track mode (1cm)					
<b>Measuring time</b>						
Repeat meas.	Normal: Prism, Ref.sheet 2.0sec. (1mm) Normal: Prism, Ref.sheet 1.2sec. (1mm) Track: Prism, Ref.sheet 0.4sec. (1cm) *Quick mode					
Initial meas.	Normal: Reflectorless 2.3sec. (1mm) Normal: Prism, Ref.sheet 2.5sec. (1mm) ("NX" models only) *Quick mode					
<b>Target selection</b>						
Non Prism	0 offset					-
Reflector sheet	0 offset / +99 ~ -99 offset					
Prism	0 offset / -30 offset / +99 ~ -99 offset					
<b>Angle Measurement</b>						
Type	Absolute Rotary Encoder					
Method	Horizontal: 2 sides / Vertical: 2 sides					
Accuracy (ISO17123-3)	2"	3"		5"		6"
Minimum count	1"					
Compensator	Triple Axis			Dual Axis		
<b>Display / keyboard</b>						
Display Type	Graphic LCD / 20 alphanumeric 8 lines / 240 x 96 pixels					
Quantity	2			1 (2 <sup>nd</sup> optional)		
Keys	22 each (12 numeric / 5 function / 5 special)					
Display back light	Intensity settings: 10 steps					
Date Clock						
NX MODEL		Yes		Yes		-
EX MODEL		Yes		No		No
<b>Physical</b>						
Tangent screws	2 speed			1 speed		
<b>Vials</b>						
Plate (electronic)	30° / 1 div.					
Circular	8' / 2mm					
<b>Plummet</b>						
Accuracy	Visible laser ± 0.8mm (instrument height 1.5m)					
Intensity	10 steps					
Base	Tribrach			Shifting	Fixed	Tribrach
Working temperature	-20° C ~ +50° C / -4° F ~ +122° F					
Dust and Water protection	IP56					
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		
Case dimensions	268 (W) x 442 (H) x 465 (H)mm					5.7 kg / 12.6 lbs
Case weight	3.8 kg / 8 lbs					
<b>Battery</b>	Varies by country (standard camcorder battery, Ni-MH rechargeable DC6V)					
Charger	Input voltage AC 100-240V (AC01) Output voltage DC7.5 (BC03)					
<b>Internal Memory</b>						
Coordinates data	18.600 points			16.000 points		12.000 points

**Note:**

- \* The measurement range may vary by measurement conditions.
- Normal conditions: 20km visibility with slight shimmer.
- Good conditions: 40km visibility, overcast, no heat, no shimmer and moderate wind.
- \* Reflector sheet: PENTAX genuine Reflector sheet (5cm x 5cm).
- \* Quick mode, which is effective only under Normal mode (1mm) setting, functions with Prism and Reflector Sheet. It is incorporated in all X series models and effective up to 500m.
- \* When Quick Mode is on, the EDM accuracy using Prism and Reflector Sheet is ±(3 + 2ppm x D)mm. When Automatic Correction is activated in Quick Mode, the EDM accuracy is ±(3 + 10ppm x D)mm.
- \* EDM Measuring time varies according to distance to be measured and conditions of the environment.

**\* Reflectorless:**

- The measurement range and accuracy of Reflectorless are determined by the white side of the Kodak Gray Card.
- The measurement range may be influenced by the shape of the target and its environment.
- It takes time, longer than usual, to measure the distance exceeding 200m or to measure the distance to the object that is hard to measure.
- The maximum distance that can be shown on the display is 322m in the non-prism measurement mode.
- The measurement range, accuracy of distance measurement and time required to measure may be influenced by the shape, size of surface area and reflection rate of the target and its environment.

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**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



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