

2005 Laser Rangefinder Survey

MANUFACTURER/DISTRIBUTOR	Laser Atlanta LLC	Laser Atlanta LLC	LaserCraft Inc.	LaserCraft Inc.	LaserCraft Inc.
MODEL	Advantage CI - Rugged	Advantage CI - Compact	Contour XLRic	Contour XLRi	Contour XLR
U.S. SUGGESTED LIST PRICE	\$2,999	\$2,999	\$3,995	\$2,995	\$2,695
COMPANY PHONE NUMBER	770/446-3866	770/446-3866	770/409-9660	770/409-9660	770/409-9660
AIMING, DISPLAY, MEASUREMENT					
Device for aiming at target (telescope or heads-up display)	HUD	HUD	HUD	HUD	HUD
Illumination for observing aiming point in low or no light environments?	None	None	Yes	Yes	Yes
Type of laser (Type I, II, etc.)	Type 1	Type 1	Type 1	Type 1	Type 1
Certifications for device (UL, ISO, etc.)	FDA Class 1	FDA Class 1			
Laser device, wavelength, color (e.g., laser diode, 940 nm, infrared, with visible laser for pointing only)	Infrared Laser	Infrared Laser	[1]	[1]	[1]
Reflectorless?	Yes	Yes	Yes	Yes	Yes
Measurement time (reflectorless and with reflector, if different) (in seconds)	0.33	0.33	[2]	[2]	[2]
Range to Kodak Gray Card (gray side) (ft/m)	2000 ft	2000 ft	1000+ ft	1000+ ft	1000+ ft
Range to Kodak Gray Card (white side) (ft/m)	2500 ft	2500 ft	3200+ ft	3200+ ft	3200+ ft
Range accuracy (RMS or std. dev.) (±x ft/±y m)	2 in or 5 cm	2 in or 5 cm	[3]	[3]	[3]
Range resolution (ft/m)	.01 ft	.01 ft			
Range repeatability (ft/m)	.02 ft	.02 ft	± 0.5 ft	± 0.5 ft	± 0.5 ft
Number of measurement pulses per measurement	238	238	[4]	[4]	[4]
Software for eliminating false measurements from foreground clutter?	Yes [1]	Yes [1]	Yes	Yes	Yes
If yes, can the range of measurements be ignored be set by the user?	Yes	Yes	No	No	No
Error checking for intermittent obstructions, etc.?	Yes	Yes	Yes	Yes	Yes
Device for outputting measured or calculated data to observer (LCD screen, LEDs, heads-up display)?	LCD Screen & HUD	LCD Screen & HUD	LCD and HUD	LCD and HUD	LCD and HUD
Does the instrument have a telescope or heads-up display so that measurement results and key status indicators are visible while sighting the target?	Yes	Yes	HUD standard; monocular option	HUD standard; monocular option	HUD standard; monocular option
Illumination for observing display in low or no light environments?	Yes	Yes	Yes	Yes	Yes
SOFTWARE AND ADVANCED MEASUREMENTS					
Available with inclinometer (tilt or vertical angle sensor)? (Yes, no, or in tripod only)	Yes	Yes	Yes	Yes	No
Range of tilt in which inclinometer operates (±xyz°)	±50°	±50°	± 40°	360°	N/A
Precision (least count) of inclinometer (0.x° or 0.y')	±0.4°	±0.4°	0.1	0.1	N/A
Available with azimuth detection? (Yes or No)	Yes	Yes	Yes	No	No
Compass for automatic azimuth detection available or included? (Available or included as standard)	Included	Included	Standard	N/A	N/A
Accuracy of inclinometer (RMS or standard dev.) (±x°)	0.4 RMS	0.4RMS	0.4 @ > 20°	0.1	N/A
Repeatability of inclinometer measurements (±y°)	0.4°	0.4°	0.2° typical	0.2° typical	N/A
Range in which compass operates (e.g., 0-369.99 degrees)	0 to 359.99°	0 to 359.99°	[5]	N/A	N/A
Precision (least count) of compass (0.x° or 0.y')	0.01°	0.01°			
Accuracy of compass (RMS or standard dev.) (±x°)	±0.1°	±0.1°	± 0.5°	N/A	N/A
Repeatability of compass measurements (±y°)	0.1°	0.1°	0.1°	N/A	N/A
Onboard software for applications available as standard or optional selections? (Yes or No)	No	No	No	No	No
Is the software optional or is software available that expands the standard application software for use with this product in the field? (Yes or No)	Yes	Yes	N/A	N/A	N/A
Applications supported (list):					
Support indirect measurements? E.g. distance-distance, azimuth-azimuth or distance-azimuth calculations?	Yes	Yes	Yes	Yes	Yes
When in reflectorless mode, is the valid range selectable to eliminate false readings from other objects approximately in line?	Yes	Yes	Yes	Yes	Yes
Compatible with GPS systems? (If yes, please list.)	Yes [2]	Yes [2]	[6]	[6]	[6]
Compatible with data recorders (If yes, please list.)	Yes	Yes	[6]	[6]	[6]
Compatible with GIS mapping systems? (If yes, please list.)	Yes	Yes	Yes	Yes	Yes
Compatible with CAD software (in field computers)? (If yes, please list.)	Yes	Yes			
Support output of electronic measurement or calculated data to external device?	Yes	Yes	Yes	Yes	Yes
Is data transferred automatically or at the press of a key or other command?	Both	Both	Either	Either	Either
Type of data transmission protocols supported (such as RS232C)	RS232	RS232	RS232	RS232	RS232
Is data transmission two-way so that, if desired, measurement and calculations can be commanded from external device?	Yes	Yes	Yes	Yes	Yes
Distance units supported (m, ft, in OR cu yds, cu ft, cu m)	[3]	[3]	[7]	[7]	m, ft, yds
OTHER CHARACTERISTICS					
Battery type (NiCd, NiMH, alkaline, etc.)	NiMH	NiMH	NiMH	NiMH	NiMH
Works with optional external battery?	Yes	Yes	Yes	Yes	Yes
Types of external batteries supported	NiMH	NiMH	9-18 VDC	9-18 VDC	9-18 VDC
Number of measurements with each battery type, including standard battery at 1 measurement/30 seconds	Will operate all day	Will operate all day	640	640	640
Average power consumption when taking a measurement every 30 seconds (0.x amps at Y volts or Z watts)	250 milliamps	250 milliamps	2.8 watts	2.8 watts	2.8 watts
Adapters, transformers and cables available for use with non-standard batteries? (If yes, state which.)	Yes, adapter	Yes, adapter	Adapters	Adapters	Adapters
Battery charging time (in hours)	2 hours	2 hours	2	2	2
Warranty	1 year	1 year	1 year	1 year	1 year
Weight including battery but excluding accessory devices such as compasses, cables, etc.	4.8 lbs	3.9 lbs	[8]	1.6 kg (3.5 lbs)	1.36 kg (3 lbs)
Dimensions (in/cm) (WxHxD)	8.4 x 4.5 x 7.5 in	6.4 x 3.8 x 7.3 in	7.4 x 4.25 x 10 in	7.4 x 4.25 x 10 in	7.4 x 4.25 x 10 in
Type of case provided, how much room for accessories provided (and which)	Soft carrying case	Soft carrying case	[9]	[9]	[9]
Primary material used for instrument's case	Nylon	Nylon	Padded, watertight polypropene	Padded, watertight polypropene	Padded, watertight polypropene
Drop resistance (e.g. survives 2 m drop to asphalt)	Yes	Yes, in carrying case	1 m drop to asphalt	1 m drop to asphalt	1 m drop to asphalt
Shock/vibration resistance	Yes	Yes			
Operating temperature range	-30 to 140° F	-30 to 140° F	-30 to 60° C	-30 to 60° C	-30 to 60° C
Water resistance (IP ratings)	IP54	IP54	IP67	IP67	IP67
Dust resistance (IP ratings)	IP54	IP54	IP67	IP67	IP67
AVAILABLE ACCESSORIES					
Monopole	Yes	Yes	N/A	N/A	N/A
Monocular (state power and whether field detachable)	8x monocular scope	8x monocular scope	Yes, 8X	Yes, 8X	Yes, 8X
Fast battery charger	Smart Charging Station	Smart Charging Station	Standard	Standard	Standard
Tripod	Yes	Yes	N/A	N/A	N/A
Tripod with inclinometer and compass (if available, state details if more accurate than onboard system, power requirements, etc.)	[4]	[4]	N/A	N/A	N/A
Additional Features	Bluetooth	Bluetooth	[10]	[10]	[10]
Reader Service Number	1	2	3	4	5

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MANUFACTURER/DISTRIBUTOR	Laser Technology Inc.	Measurement Devices Limited	Measurement Devices Limited	Riegl USA	Riegl USA
MODEL	TruPulse 200	LaserAce 300	LaserAce Survey	FG21 HA	FG21 LR
U.S. SUGGESTED LIST PRICE	\$699 to \$799	Starts at \$2,850	Starts at \$1,995	\$9,350	\$9,350
COMPANY PHONE NUMBER	303/649-1000	281/646-0050	281/646-0050	407/248-9927	407/248-9927
AIMING, DISPLAY, MEASUREMENT					
Device for aiming at target (telescope or heads-up display)	HUD	Red dot scope	Telescope	HUD	HUD
Illumination for observing aiming point in low or no light environments?	No	N/A	N/A	No	No
Type of laser (Type I, II, etc.)	FDA Class I	GaAs laser diode	GaAs laser diode	Class 1 Eye Safe	Class 1 Eye Safe
Certifications for device (UL, ISO, etc.)	ISO, CE	[1]	[1]	ISO 9001	ISO 9001
Laser device, wavelength, color (e.g., laser diode, 940 nm, infrared, with visible laser for pointing only)	[1]	905 nm	905 nm	Laser diode 904 nm	Laser diode 904 nm
Reflectorless?	Yes	Yes [2]	Yes [9]	Yes	Yes
Measurement time (reflectorless and with reflector, if different) (in seconds)	0.5 sec min.	0.3 seconds	0.3 seconds	< 1 sec	< 1 sec
Range to Kodak Gray Card (gray side) (ft/m)	600 ft	590 ft / 180 m	361 ft / 110 m	400 m / 800 m selectable	1200 m
Range to Kodak Gray Card (white side) (ft/m)	1000 ft	1017 ft / 310 m	689 ft / 210 m	600 m / 1200 m selectable	2000 m
Range accuracy (RMS or std. dev.) (±x ft/±y m)	±1 ft	Typically 10 cm	Typically 10 cm	5 cm / 10 cm selectable	0.2 m
Range resolution (ft/m)	0.5 ft / 0.1 m	.39 in / 1 cm	.39 in / 1 cm	1 cm / 5 cm	0.1
Range repeatability (ft/m)	0.5 ft / 0.1 m	5 cm	5 cm		
Number of measurement pulses per measurement	60	20	20		
Software for eliminating false measurements from foreground clutter?	Yes	Yes	Yes	Yes	Yes
If yes, can the range of measurements to be ignored be set by the user?	No	No	No	Yes	Yes
Error checking for intermittent obstructions, etc.?	Yes	No	No	Yes	Yes
Device for outputting measured or calculated data to observer (LCD screen, LEDs, heads-up display)?	HUD, serial	LCD	LCD	HUD	HUD
Does the instrument have a telescope or heads-up display so that measurement results and key status indicators are visible while sighting the target?	Yes	No	No	Yes	Yes
Illumination for observing display in low or no light environments?	No	Yes, automatic sensor	Yes	No	No
SOFTWARE AND ADVANCED MEASUREMENTS					
Available with inclinometer (tilt or vertical angle sensor)? (Yes, no, or in tripod only)	Yes	Yes, built-in	Yes, built-in	Yes	Yes
Range of tilt in which inclinometer operates (±xyz°)	±90°	-90 to 90°	-70 to 70°	60 to -30°	60 to -30°
Precision (least count) of inclinometer (0.x° or 0.y')	0.1°	0.1°	0.1°	0.1°	0.1°
Available with azimuth detection? (Yes or No)	No, optional	Yes	Yes	No	No
Compass for automatic azimuth detection available or included? (Available or included as standard)	Available	Available [3]	Available	No	No
Accuracy of inclinometer (RMS or standard dev.) (±x°)	±0.25°	0.3° at 0∞	0.3° at 0∞		
Repeatability of inclinometer measurements (±y°)	0.1°	N/A	N/A		
Range in which compass operates (e.g., 0-369.99 degrees)	0 to 359.99°	360°	360°		
Precision (least count) of compass (0.x° or 0.y')	0.01°/grad	0.1°	0.1°		
Accuracy of compass (RMS or standard dev.) (±x°)	±0.3°	Typically better than 1°	Typically better than 1°		
Repeatability of compass measurements (±y°)	±0.1°	Better than 1°	Better than 1°		
Onboard software for applications available as standard or optional selections? (Yes or No)	Yes	Yes standard	Yes standard	Yes	Yes
Is the software optional or is software available that expands the standard application software for use with this product in the field? (Yes or No)	Yes	Yes	Yes	Yes	Yes
Applications supported (list):	Height, missing line	[4]	[4]		
Support indirect measurements? E.g. distance-distance, azimuth-azimuth or distance-azimuth calculations?	Yes	Yes	Yes	No	No
When in reflectorless mode, is the valid range selectable to eliminate false readings from other objects approximately in line?	Yes	No	Yes	Yes	Yes
Compatible with GPS systems? (If yes, please list.)	Yes	[5]	[5]	No	No
Compatible with data recorders (If yes, please list.)	Yes	No	No	Yes	Yes
Compatible with GIS mapping systems? (If yes, please list.)	Yes	Yes [6]	Yes [6]		
Compatible with CAD software (in field computers)? (If yes, please list.)	Yes	Yes [7]	Yes [7]	Yes, Carlson, TDS	Yes, Carlson, TDS
Support output of electronic measurement or calculated data to external device?	Yes	Yes	Yes	Yes, RS232	Yes, RS232
Is data transferred automatically or at the press of a key or other command?	Either	Automatic when laser is fired	Automatic when laser is fired	Yes, selectable	Yes, selectable
Type of data transmission protocols supported (such as RS232C)	RS232 & Bluetooth	RS232, 4800 or 9600 Baud	RS232 and Bluetooth	RS232	RS232
Is data transmission two-way so that, if desired, measurement and calculations can be commanded from external device?	Yes	Yes	Yes	Yes	Yes
Distance units supported (m, ft, in OR cu yds, cu ft, cu m)	[2]	m and ft	m and ft	m, yds, ft	m, yds, ft
OTHER CHARACTERISTICS					
Battery type (NiCd, NiMH, alkaline, etc.)	NiMH, alkaline	2 x AA alkaline cells	Camcorder rechargeable	Yes, multiple	Yes, multiple
Works with optional external battery?	No	No	No	Yes, multiple	Yes, multiple
Types of external batteries supported	N/A	N/A	N/A	Yes, multiple	Yes, multiple
Number of measurements with each battery type, including standard battery at 1 measurement/30 seconds	3000	5 hours +	5 hours +	2000>alkaline	2000>alkaline
Average power consumption when taking a measurement every 30 seconds (0.x amps at Y volts or Z watts)	50 mA @ 3V	N/A	N/A		
Adapters, transformers and cables available for use with non-standard batteries? (If yes, state which.)	N/A	No	No	Yes, multiple	Yes, multiple
Battery charging time (in hours)	N/A	N/A	3 hours		
Warranty	1 year	1 year	1 year	1 year	1 year
Weight including battery but excluding accessory devices such as compasses, cables, etc.	8 o	600 g / 22 o	400 g / 14 o	1.45 kg	1.45 kg
Dimensions (in/cm) (WxHxD)	5 x 2 x 3.5 in	17.5 x 10.65 x 5.6 mm	11.0 x 10.0 x 5.0mm	185 x 120 x 60	185 x 120 x 60
Type of case provided, how much room for accessories provided (and which)	Belt case, lanyard	Soft canvas, space for compass	Soft canvas bag	Heavy plastic	Heavy plastic
Primary material used for instrument's case	Delron	Reinforced polycarbonate	Glass filled nylon (BCF15NC)	Plastic	Plastic
Drop resistance (e.g survives 2 m drop to asphalt)	Yes	Yes	Yes	Yes	Yes
Shock/vibration resistance	Yes	2 m asphalt	2 m asphalt	IEC 68 2 6	IEC 68 2 6
Operating temperature range	-4 to 140° F	-10 to 45° F	-10 to 45° F	≠10 to 50°	≠10 to 50°
Water resistance (IP ratings)	IP54	IP65	IP65	IP64	IP64
Dust resistance (IP ratings)	IP54	IP65	IP65	IP64	IP64
AVAILABLE ACCESSORIES					
Monopole	Yes	Yes	Yes	Yes	Yes
Monocular (state power and whether field detachable)	7X, no			6 x 30 multilayer	6 x 30 multilayer
Fast battery charger	N/A	N/A	N/A	Yes	Yes
Tripod	Yes	Yes	Yes	Yes	Yes
Tripod with inclinometer and compass (if available, state details if more accurate than onboard system, power requirements, etc.)	N/A	Yes [8]	Yes [10]	No	No
Additional Features					
Reader Service Number	[3]	Yes	Yes		
	6	7	8	9	10

2005 Laser Rangefinder Survey Notes

Laser Atlanta

- 1. Built in Obstructive Mode.
- 2. Leica, Trimble, Ashtech, Sokkia, Thales, TDS Recon, etc.
- 3. m, ft, yds, sq m, sq ft, sq yd.
- 4. Vertical, horizontal, dual encoding tripods.

Laser Technology

- 1. Laser diode, 905 nm, infrared, pulse.
- 2. m, ft, yds, degrees, grads.
- 3. Optional angle encoder, accurate to 0.01 degrees, onboard solutions, zero parallax, thru-the-lens.

LaserCraft Inc.

- 1. Laser diode, 905 nm, infrared.

- 2. Available in 0.3 sec or 5 mS.
- 3. 0.1 m to a white target @ 85 m.
- 4. 60/ 0.3 second or 1/ 5 mS.
- 5. 50 to 130°, 90 being horizontal.
- 6. Yes, Trimble, Leica, Sokkia, CMT, Thales.
- 7. m, ft, yds, sq m, sq yd, sq ft.
- 8. 1.6 kg (3.5 lbs) compass built-in.
- 9. Hard carrying case, mounting assembly, 2 batteries, cables.
- 10. Tripod mounting yoke assembly; Bluetooth-enabled.

MDL

- 1. Class 1 CENELEC EN60825/ FDA.
- 2. Up to 300 m; reflectors to 5 km.
- 3. Digital 3 axis fluxgate, available optional extra.

- 4. Surveying, stockpile measurements, agricultural areas, cross sections, accident surveys, GPS offsets, cable clearances and heights, tree height, profiling.
- 5. Trimble, Leica, Thales, PenMap.
- 6. Pocket GIS, PenMap, FastMap CE.
- 7. AutoCad.
- 8. Horizontal angle encoder, accuracy 0.2°, resolution 0.1°, power 6 x AA cells, wide selection of accessories including GPS.
- 9. Up to 150 m; reflectors to 600 m.
- 10. LaserAce GIS Pole, digital optical encoder 360°, encoder accuracy 0.2°, resolution 0.1°, power 4 x C cells, wide selection of accessories including GPS.