

ADVANTAGETM

Laser Measurement Applications Guide

MPH Industries, Inc.
316 East Ninth Street
Owensboro, KY 42303
U.S.A.

Tel: 888-689-9222
Fax: 270-685-6288

<http://www.mphindustries.com>
info@mphindustries.com

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How To Measure...

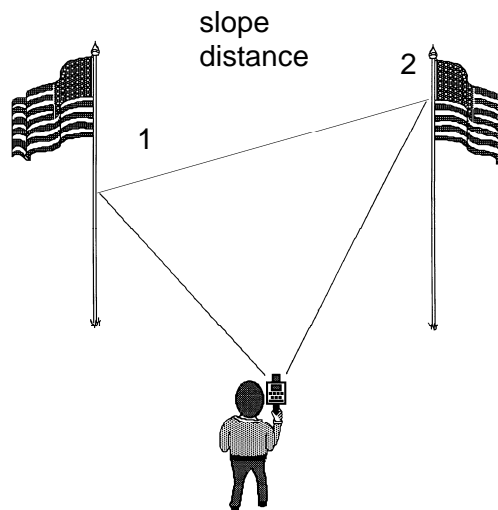
Slope Distance From a Remote Point

2-Shot Missing Line: 3-Dimensional (MENU A A B B C)

2-Shot	Pg AABB
Missing Line	
A:Vertical	3-Dim@C
B:Horiz.	Special:D

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 2-Shot Missing Line	B
7	Select 3-Dim	C
8	Shoot point 1	-
9	Shoot point 2	-

Read slope distance (3dRange) from the LCD



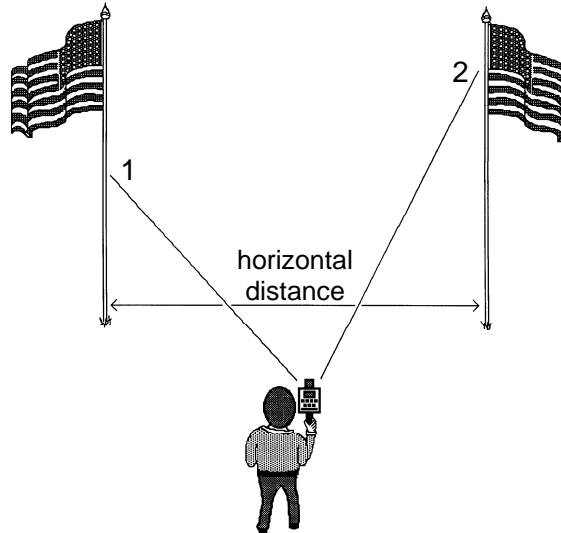
Horizontal Distance From a Remote Point

2-Shot Missing Line: Horizontal (MENU A A B B B)

2-Shot	Pg AABB
Missing Line	
A:Vertical	3-Dim:C
B@Horiz.	Special:D

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 2-Shot Missing Line	B
7	Select Horizontal	B
8	Shoot point 1	-
9	Shoot point 2	-

Read horizontal distance (HmRange) from the LCD



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Height from a Remote Point

2-Shot Missing Line: Vertical Separation (MENU A A B B A A)

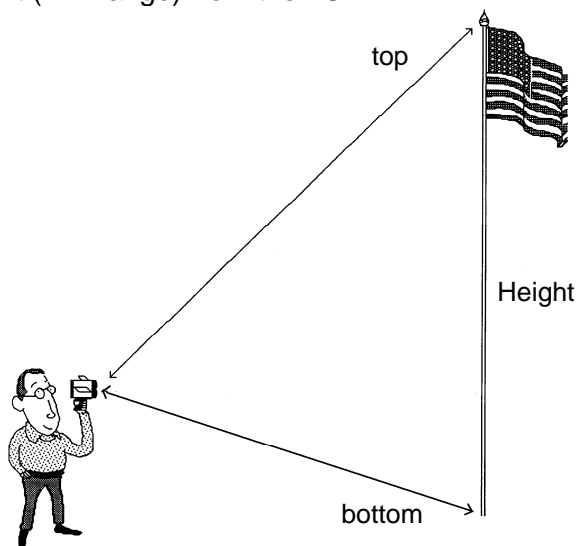
2-Shot Vert Pg AABBA

A@Height Difference

B:Short Separation

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 2-Shot Missing Line	B
7	Select Vertical	A
8	Select Height Difference	A
9	Shoot Bottom of Target	-
10	Shoot Top of Target	-

Read height (VmRange) from the LCD



Vertical Distance Between 2 Close Points

2-Shot Missing Line: Short Column (MENU A A B B A B)

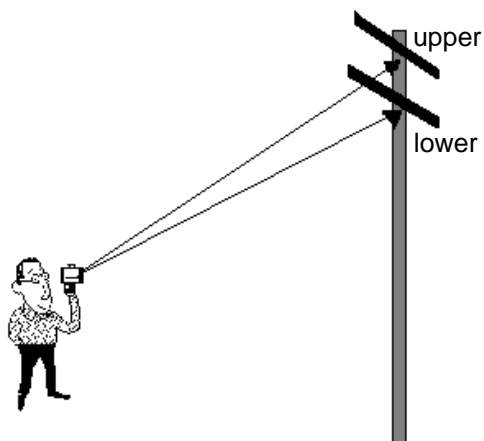
2-Shot Vert Pg AABBA

A:Height Difference

B@Short Separation

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 2-Shot Missing Line	B
7	Select Vertical	A
8	Select Short Separation	B
9	Shoot lower point	-
10	Shoot upper point	-

Read short vertical distance (VsRange) from the LCD



NOTE: The two points **must be close** to each other and **along the same vertical line** (in a column). Shooting points far apart or points not lined up vertically may give erroneous results.

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How To M

Height with One Shot

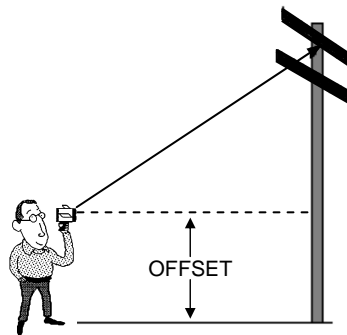
1-Shot Vertical (MENU A A B A A)

```
1-Shot      Pg AABA
A@Vertical
B:Horizontal
C:Horiz. & Vert.
```

```
Vertical    Pg AABAA
Offset =    +0.0ft.
A:>Up      ^<:C
B:<Down    0 Offset@D
```

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 1-Shot	A
7	Select Vertical	A
8	Enter Vertical Offset value*	A, B, C, D
9	Shoot top of target	-

Read height (V Range = vertical, VoRange = vertical with offset) from the LCD



* Vertical offset is the height of the rangefinder above the base of the target. If the target base and user position are equal (ground is flat), this value will be the height of the rangefinder from the ground.

Horizontal Distance with One Shot

1-Shot Horizontal (MENU A A B A B)

```

1-Shot      Pg AABA
A:Vertical
B@Horizontal
C:Horiz. & Vert.
    
```

```

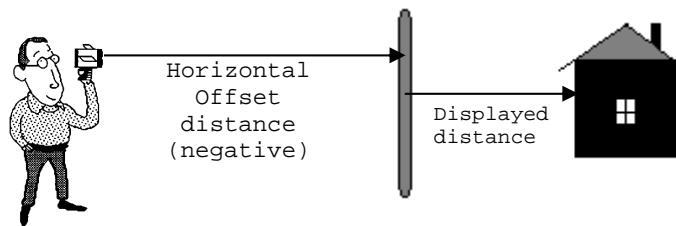
Horizontal  Pg AABAB
Offset =    +0.0ft.
A:>Up      ^<:C
B:<Down    0 Offset@D
    
```

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select 1-Shot	A
7	Select Horizontal	B
8	Enter Horizontal Offset value*	A, B, C, D
9	Shoot top of target	-

Read horizontal distance (H Range = horizontal, HoRange = horizontal with offset) from the LCD

* Horizontal offset is the distance from the rangefinder to the desired measurement point. This should be a negative value as the offset is added to the range measured from the Advantage™.

An example is measuring setback of a house from the curb from the centerline. The distance from the curb to the centerline is the offset value.



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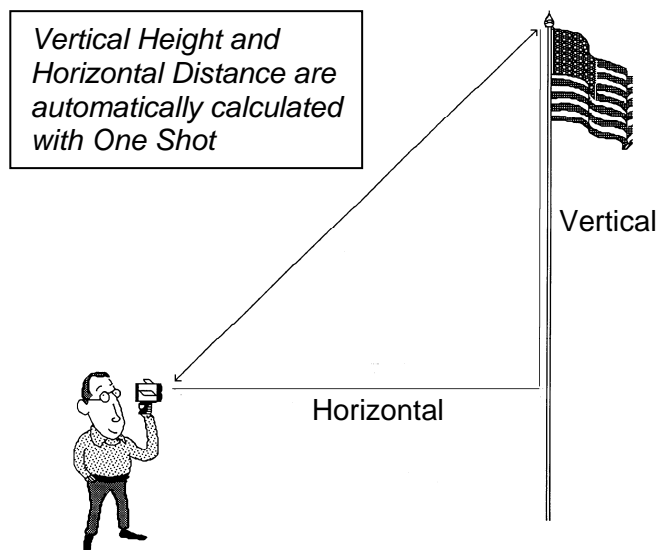
Horizontal and Vertical Distances with 1 Shot

1-Shot Horizontal & Vertical (MENU A A B A C)

1-Shot	Pg AABA
A:Vertical	
B:Horizontal	
C@Horiz. & Vert.	

#	Action	Key
10	Turn On Advantage™	PWR
11	Select Menu	MENU
12	Select Range	A
13	Select Mode	A
14	Select Auto-Compute	B
15	Select 1-Shot	A
16	Select Horiz. & Vert.	C
17	Shoot target	-

Read Horizontal (H) and Vertical (V) ranges from the LCD



NOTE: The horizontal and vertical ranges will be shown on only the LCD. The HUD and the serial output will act as if the standard range mode is selected (slope range will be used). To output the horizontal and vertical ranges through the serial port, select the Laser Atlanta \$LA1KD sentence format and Cartesian coordinates (see page **Error! Bookmark not defined.**).

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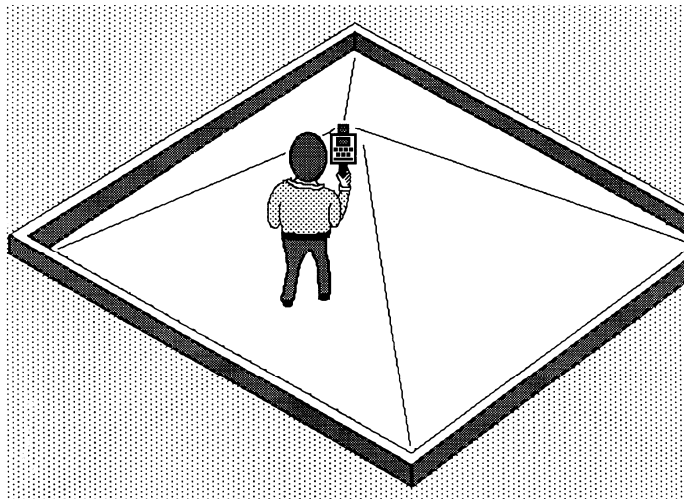
Inscribed Area

Area: Irregular (MENU A A B C A A)

Area	Pg AABCAA
A@Irregular (n pts.)	
B:Rectangle (3 pts.)	
C:Right Triangle	

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Ranging	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select Multi-Shot	C
7	Select Area	A
8	Select Irregular (n pts)	A
9	Shoot corners in succession (rotate in one direction only)	-
10	Finish by re-shooting first corner	-

Read inscribed area (iArea) from the LCD



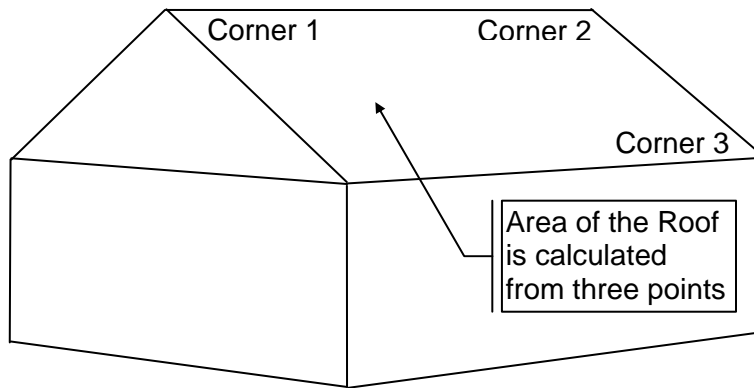
Area of a Rectangle

Area: Rectangle (MENU A A B C A B)

Area	Pg AABCA
A:Irregular (n pts.)	
B@Rectangle (3 pts.)	
C:Right Triangle	

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select Multi-Shot	C
7	Select Area	A
8	Select Rectangle (3 pts)	B
9	Shoot corner 1	-
10	Shoot corner 2	-
11	Shoot corner 3	-

Read rectangular area (rArea) from the LCD



NOTE: The area you shoot **must be rectangular** in shape. Shooting points which do not define a rectangle may give erroneous results.

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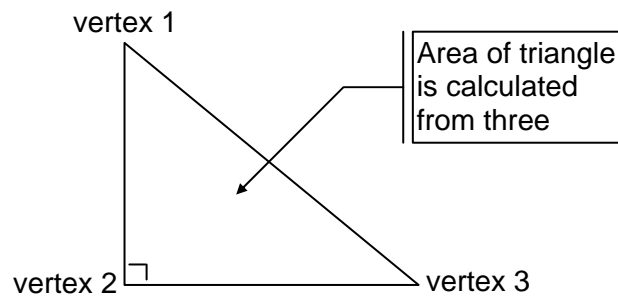
Area of a Right Triangle

Area: Right Triangle (MENU A A B C A C)

Area	Pg AABAC
A:Inscribed (n pts.)	
B:Rectangle (3 pts.)	
C@Right Triangle	

#	Action	Key
1	Turn On Advantage™	PWR
2	Select Menu	MENU
3	Select Range	A
4	Select Mode	A
5	Select Auto-Compute	B
6	Select Multi-Shot	C
7	Select Area	A
8	Select Right Triangle	C
9	Shoot vertex 1	-
10	Shoot vertex 2 (right angle corner)	-
11	Shoot vertex 3	-

Read right triangle's area (tArea) from the LCD



NOTE: The area you shoot **must be a right triangle**. You **must shoot the points in the order described above**.

Bisect Angle

2-Shot Missing Line: Bisect (MENU A A B B D A)

2-Shot	Pg AABBD
Missing Line	
A:Vertical	3-Dim:C
B:Horiz.	Bisect@D

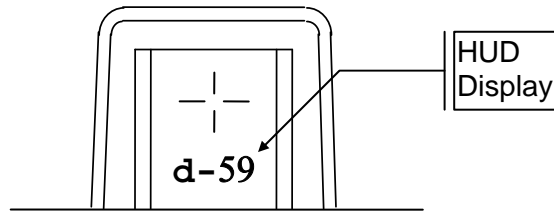
This function returns the cable turn angle and the bisect angle line (guy wire line) between two utility poles along a roadside.

#	Action	Key
1	Stand at pole 2 (or marker 2)	-
2	Turn On Advantage™	PWR
3	Select Menu	MENU
4	Select Range	A
5	Select Mode	A
6	Select Auto-Compute	B
7	Select 2-Shot Missing Line	B
8	Select Special	D
9	Select Obtuse Bisect	A
10	Shoot pole 1 (or marker 1)	-
11	Shoot pole 3 (or marker 3)	-

The LCD will display the **deflection angle** calculation. This is **the cable turn angle** between the poles shot in steps 9 and 10. See Figure 1 on the next page.

Roll= 90.0°
Inclination= 90.0°
Deflection= 17.5°
Range= 100.48f

The HUD will continuously update how many degrees off from the bisect line you are currently looking. Turn this many degrees to aim up along the bisect line (guy wire line).



A negative number means to turn counterclockwise.
A positive number means to turn clockwise.
When the number reads 'd 0' you are aiming along the bisect line. In the above example you would rotate 59 degrees counterclockwise to aim along the bisect line.

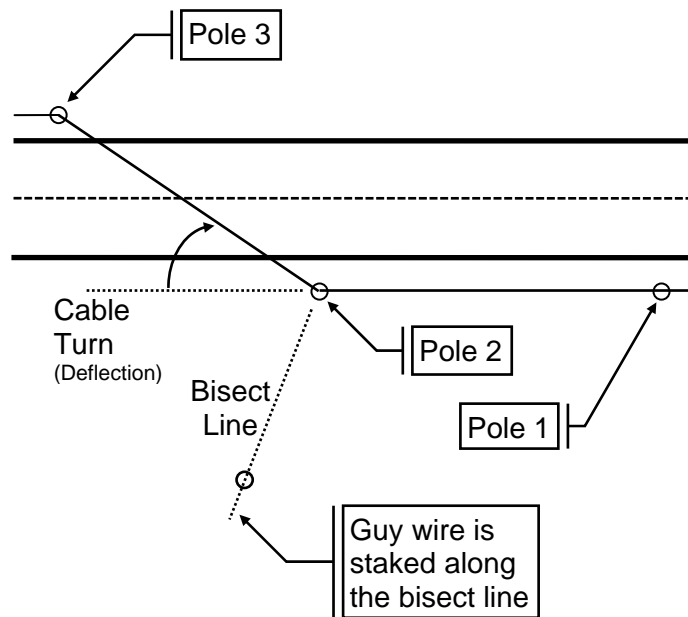


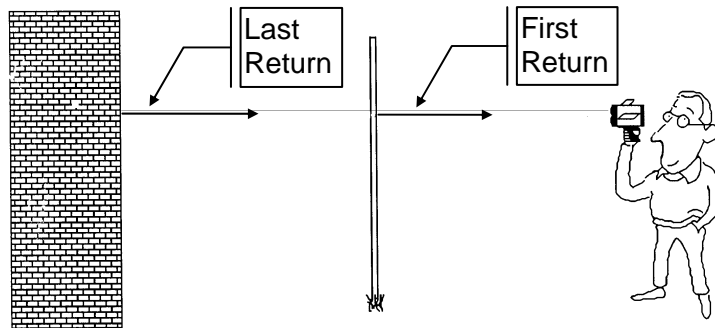
Figure 1. Overhead View of Utility Lines Along a Road

Using First/Last Return

MENU A D

When using the Advantage™, it is possible to hit more than one object at the same time. This is caused by the laser beam diverging, or spreading out, as it travels. If the laser beam is larger than the intended target, some light may go around it and be reflected back from other objects.

Example: You are attempting to range to a flagpole that is located in front of a building.



Question: If some of the laser light reflects from the flag pole and some from the building, which does the Advantage™ use to calculate distance?

Answer: The Advantage™ will compute distance based on the setting of the Obstructed feature. If Obstructed is OFF the distance will be calculated to the nearest object, or in this case the telephone pole. If in Obstructed ON, the Advantage™ will calculate distance to the farthest object, or in our example the building.

This mode is particularly useful if attempting to range to targets partially obscured by foliage, dust, fog, or rain.