

# E180



## MANUAL

English

**EASY-LASER®**



## Damalini AB

Damalini AB develops, manufactures and markets Easy-Laser® measurement and alignment equipment based on laser technology. We have more than 25 years of experience from measurement tasks in the field and product development. We also provide measurement service, which means that we ourselves use the equipment we develop, and continuously improve it. Because of this we dare to call ourselves measurement specialists. Do not hesitate to contact us about your measurement problems. Our expertise will help you solve it in an easy way.

## Declaration of conformity


Equipment: Easy-Laser® product range Damalini AB declares that the Easy-Laser® product range is manufactured in conformity with national and international regulations. The system complies with, and has been tested according to the following requirements:



EMC Directive	2004/108/EG
Low Voltage Directive	2006/95/EC
Laser Classification	EN-60825-1 and complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
RoHS Directive	2002/95/EG
WEEE Directive	2002/96/EG

For Bluetooth® devices: This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference
  - (2) this device must accept any interference received, including interference that may cause undesired operation.
- Disposal of old electrical and electronic equipment (Applicable throughout the European Union and other European countries with separate collection programs). This symbol,  found on product or on its packing, indicates that this product should not be treated as household waste when disposed of. It should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed correctly, you will help to prevent potential negative consequences to the environment and human health. For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased this product.

## Quality certificate

Damalini AB is ISO 9001:2008 certified. Certificate number 900958.

Damalini AB confirm, that our products are produced according to applicable national and international regulations and standards. All components are checked before assembly and final products are tested in functionality and visually checked before delivery

The calibration of the equipment fully complies with ISO9001: 2008 #7.6

## Safety precautions

Easy-Laser® is a laser instrument in laser class II with an output power less than 1 mW, which requires the following safety precautions:

- Never stare directly into the laser beam
- Never aim the laser beam at anyone else's eyes.

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### ***Note!***

*Opening the laser units can result in hazardous radiation, and will invalidate the manufacturer warranty.*

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If starting the machine to be measured would result in injuries, the possibility to unintentionally start it must be disabled before mounting the equipment, for example by locking the switch in the off position or removing the fuses. These safety precautions should remain in place until the measurement equipment has been removed from the machine.

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### ***Note!***

*The system should not be used in explosive risk areas.*

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## Manuals as PDF

You can download our manuals in pdf format from our website. The pdf's are also available on the USB memory stick that is delivered with most systems.

## EasyLink

The new version of our database program EasyLink is available on the USB memory stick that is delivered with most systems. You can always download the latest version from [damalini.com](http://damalini.com)>download>software.

## Travelling with your measurement system

When travelling by airplane with your measurement system we strongly recommend that you check which rules apply for each airline company. Some companies/countries have limitations for checked baggage when it comes to items including batteries. For information about Easy-Laser® batteries, please see system unit details in the end of this manual. It is also good practice to remove the batteries from the equipment, when possible, e.g. D22, D23 and D75.

## Limited warranty

This product is manufactured under Damalini's strict quality control system. Should the product fail within two (2) years from the date of purchase under normal usage conditions, Damalini will repair or replace the product free of charge.

1. Using new or refurbished replacement parts.
2. Exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product.

Proof of purchase date should be confirmed, and sent together with a copy of the original purchase document. Warranty is valid under normal usage described in the user's manual appended with the product. The warranty comprises failure on Easy-Laser® product that could be related to material and/or fabrication errors. The warranty is valid only in the country of purchase.

The warranty is not valid in the following cases:

- If the product is broken due to mishandling or incorrect operation
- If the product has been exposed to extreme temperature, calamity, chock or high voltage.
- If the product has been modified, repaired or disassembled by unauthorized personnel.

Compensation for possible damage due to failure on Easy-Laser® product is not included in the warranty. Freight cost to Damalini is not included in the warranty.

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### **Note!**

*Before delivery of the product for warranty repair, it is the responsibility of the buyer to backup all data. Data recovery is not included in the warranty service and Damalini is not responsible for data that may be lost or damaged during transit or repair.*

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### **Lithium Ion battery limited warranty**

Lithium ion batteries inevitably lose power during their lifetimes, depending on usage temperatures and the number of charging cycles. Therefore, the internal rechargeable batteries used in the E-series are not included in our general 2-year warranty. There is a 1 year warranty for the battery capacity not to fall below 70 % (a normal change means that the battery must have more than 70 % capacity after more than 300 charging cycles). A 2 year warranty applies if the battery becomes unusable because of a manufacturing fault or factors that Damalini AB could be expected to have control of, or if the battery displays abnormal loss of capacity in relation to use.

### **Extended warranty**

Easy-Laser® Measurement and Alignment Systems meet the highest quality standards! For this reason, we have extended the warranty to you to a total of 3 years — free of charge! The prerequisite for a warranty extension is that you register your system parts on the Internet within 6 months of purchase. The warranty period begins on the date of purchase. The warranty extension applies to all products in accordance with the Easy-Laser® Warranty requirements.

## Service and calibration

Our Service centres will quickly assist you if your measurement system need to be repaired or when it is time for calibration.

Our main Service centre is located in Sweden. There are several local Service centres that are certified to carry out limited service and repair. Contact your local Service centre first before sending your equipment for service or repair. All Service centres are listed on our web site under Service and Calibration.

Before sending your measuring system to our main Service centre, fill in the online Service and Repair report. [www.easy-laser-service.com](http://www.easy-laser-service.com)

## Compatibility

The E-series is not compatible with previous analogue units from the D-series. You can however continue to use previous brackets.

## Disclaimer

Damalini AB and our authorized dealers will take no responsibility for damage to machines and plant as a result of the use of Easy-Laser® measurement and alignment systems.

## Copyright

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We might change and correct the manual in later issues without further information. Changes to the Easy-Laser® equipment may also affect the accuracy of the information.

*September 2015*



Fredrik Eriksson

Quality Manager, Damalini AB

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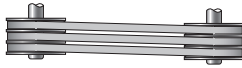
Phone: +46 31 708 63 00, E-mail: [info@damalini.com](mailto:info@damalini.com)

Web: [www.damalini.com](http://www.damalini.com)

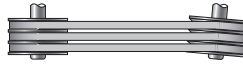
## BTA

Easy-Laser® BTA system consists of a laser transmitter and a detector. Magnetic mountings on laser and detector make it easy to mount the equipment. All types of sheave/pulleys can be aligned, regardless of belt type. You can compensate for sheaves of varying widths.

The misalignment can be offset or angular. It can also be a combination of both.



Offset misalignment



Angular misalignment



Offset and angular misalignment

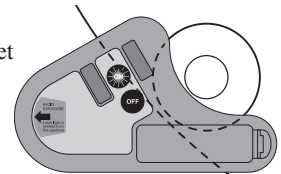
## Preparations

- Check the sheaves for radial runout. Bent shafts will make it impossible to perform an accurate alignment.
- Check the sheaves for axial runout. If possible, adjust with the mounting screws of the bushings.
- Make sure that the sheaves are clean from grease and oil.

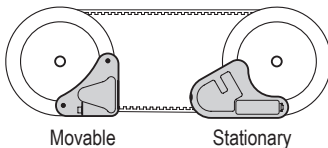
## Mount the units

The units are mounted on a flat machined surface with magnets. The magnets are very strong, try to soften the touch by putting just one magnet to sheave first, then turning the other ones in. Non-magnetic sheave/pulleys can be aligned as the units are very light and can be mounted using double-sided tape.

1. Mount the laser transmitter on the stationary machine.
2. Mount the detector on the movable machine.
3. Make sure all magnetic surfaces are in contact with the sheave.



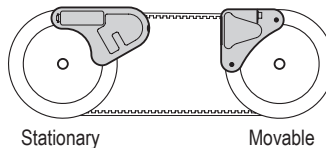
Thanks to the clever design the units fit small as well as large sheaves.



Movable

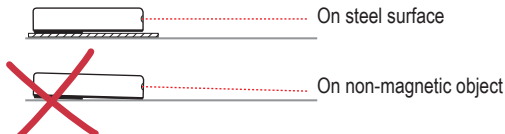
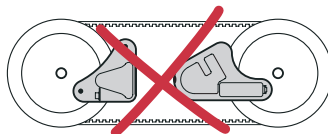
Stationary

OR



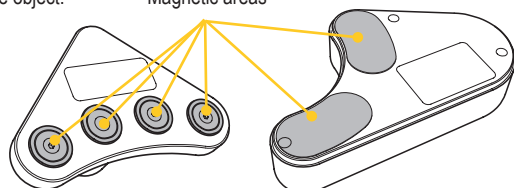
Stationary

Movable




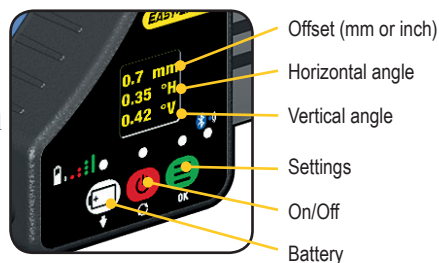
All of the magnetic surfaces must be in contact with the object.

Magnetic areas



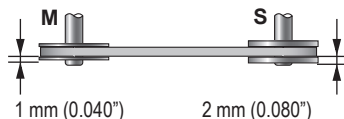
## Measure

1. Press  to start the detector and ON to start the laser transmitter.
2. Read the values. Offset, horizontal angle and vertical angle are displayed.
3. Adjust machine, see next page.





## Different sheave width

If the sheaves have different face widths, just add or subtract the difference from the zero value to get the value for perfect alignment.








## Settings

Press  to open the settings view. Use  to move up and down in the menu.

- Press  to switch position on the M and S-unit.
- Toggle between mm and inch with .

## Battery

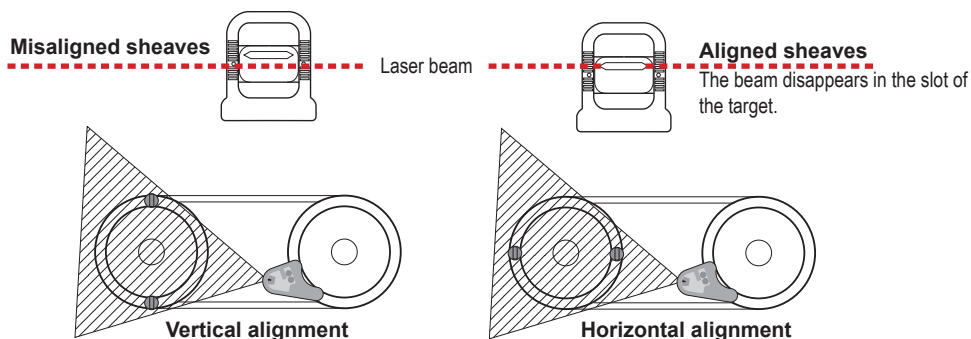
Press  to see the battery status of the detector. While the battery is charging, there is a green flashing light. The laser transmitter flashes when the battery is low. Change the batteries before you continue to measure.

-  Red, flashing once: Battery empty.
-  Red, flashing twice: Battery needs charging.
-  Green, flashing three times: Good.
-  Green, fixed light: Battery full.

### Note!

*If not using the system for a long period of time, remove the battery from the laser transmitter.*

## Align with targets





## Adjust

Start by adjusting the sheave, and then the machine. When you adjust the machine one way, it often affects the machine's other alignment conditions. Which means this process may have to be repeated several times.

### Offset

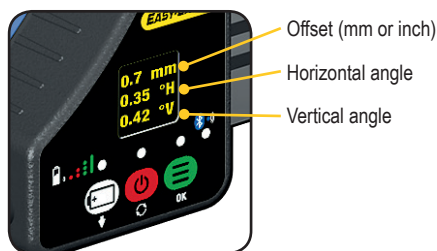
Correct offset by moving the movable machine with axial jackscrews, or by repositioning one of the sheaves on its shaft.

### Vertical

Correct vertical angular error by shimming the movable machine.

### Horizontal

Correct horizontal angular error by adjusting the movable machine with lateral jackscrews.



## Tolerance

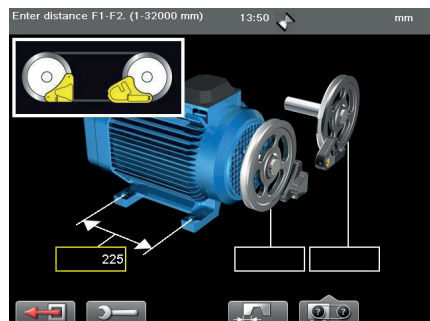
Recommended maximum tolerances from manufacturers of belt transmissions is  $0.25\text{--}0.50^\circ$ . Recommendations are always dependent on belt type. Please consult the design manual of the specific belt type.

$<^\circ$	mm/m mils/inch	
0.1	1.75	
0.2	3.49	
0.3	5.24	
0.4	6.98	Recommended
0.5	8.73	
0.6	10.47	
0.7	12.22	
0.8	13.96	
0.9	15.71	
1.0	17.45	

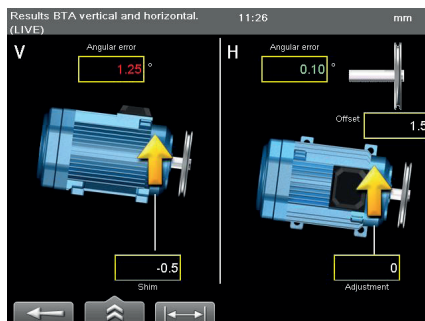
## Connect to a Display unit

The E180 BTA can be used as a separate tool. It also works with the BTA program in the Display unit of the systems E710, E540, E530 and most of the E9xx systems. Please see corresponding manual.

In the Display unit, the values are displayed live. You can also save the results in the Display unit and generate a PDF report.



The program guides you on how to mount the units on the sheaves.



Shim and adjustment values are displayed live.

## Technical data

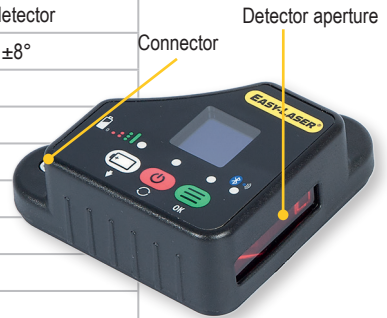
E180 BTA, Part No. 12-0796

Laser transmitter	
Sheave diameters	>Ø60 mm [2.5"]
Laser class	2
Output power	<1 mW
Laser wavelength	635–670 nm
Beam angle	60°
Accuracy, Laser plane - Reference plane:	Parallelity: < 0.05°, Offset < 0.2 mm [0.008"]
Battery type	1xR6 (AA) 1.5 V
Battery operation	8 hours continuously
Operating temperature	-10°C to +50°C
Material	ABS plastics / Hard anodized aluminium
Dimensions BxHxD:	145x86x30 mm [5.7x3.4x1.2"]
Weight	270 g [9.52 oz]



Battery Alkaline  
1xR6 (AA) 1.5 V

Detector unit	
Sheave diameters	>Ø60 mm [2.5"]
Measurement distance	Up to 3 m [9.8'] between transmitter and detector
Measurement range	Axial offset: ±3 mm [0.12"] Angular value: ±8°
Display resolution	Offset: 0.1° Angle: 0.01°
Display type	Yellow OLED 96x96 pixels
Connection	Bluetooth® wireless technology
Battery type	Li-Ion
Battery operation	5 hours continuously
Material	ABS plastics / Anodized aluminium
Dimensions BxHxD:	95x95x36 mm [3.7x3.7x1.4"]
Weight	190 g [6.7 oz]



Connector

Detector aperture

Targets	2 pcs. magnet targets with adjustable center line
Charger	(100–240 V AC) with cable
Carrying case	WxHxD: 270x225x80 mm [10.6"x8.8"x3.1"]





