

# INSTRUCTIONS

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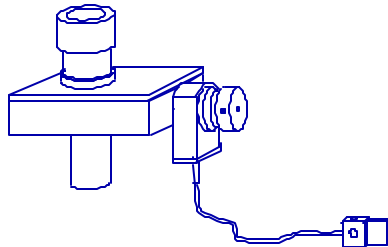
## FOR LASICO DIGITAL FILAR EYEPIECES, DMP / Z-AXIS ADAPTERS AND CUSTOM CONVERTERS WITH SM2, M AND XM PROCESSORS

Model 1602 Filar Eyepieces can be readily attached to any optical microscope with a 23.14 mm tube diameter, the Model 1603 to microscopes with 30 mm tube diameter.

It is also possible to use a 1602 Filar with 30 mm tube microscopes via a 1605-1 adapter, albeit with a reduced field of view.

### Important:

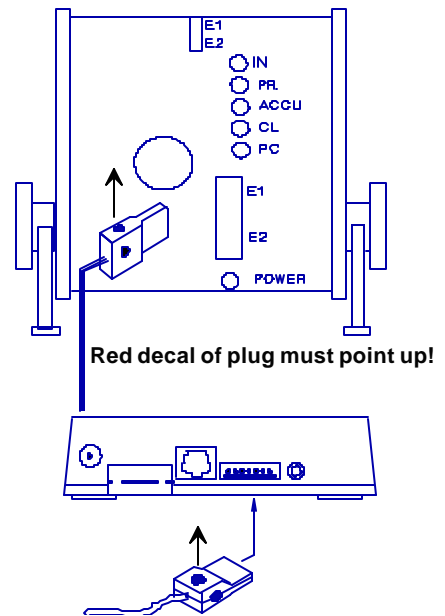
If a binocular or trinocular microscope without automatic tube length compensator is used, make sure to always set the interpupillary distance of your tube to a specific index point for both calibration and measurements.



### M/XM Processor:

Insert the 7 pin encoder plug of the measuring instrument into E1 or E2 receptacles and set the encoder input selector switch accordingly. Insert the plug in such a manner, that the red decal is pointing up. Turn the processor "ON".

Then press the **x1 button** on the front panel of the M/XM.



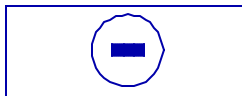
### SM2 Processor :

Insert the encoder plug horizontally into the SM2, with the red decal on the plug pointing up.

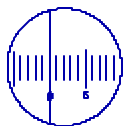
Now enter **1** into the scale input switches **0001** and turn the processor "ON"



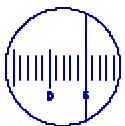
- Select the microscope objective for which the processor is to be calibrated.



- Place a stage micrometer or an object with a known dimension on your microscope stage and focus the objective on it.



- Align the vertical line of the filar reticle with a line of the stage micrometer ( in the picture it is aligned with the zero index line)  
Clear the display of the processor via its **CL button**.



- Now move the filar reticle across the field by rotating the filar knob and align it with another stage micrometer line. ( in the picture it is aligned with the No. 5 line)

- Now evaluate the result by counting the number of lines you have scanned across. (in the picture we have moved it across 5 lines)

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•The line count represents a length value which is designated as "D"  
 The result shown on the digital display is designated as " R " (= the unscaled result obtained by measuring D )

D and R are used to obtain the calibration constant "C" by entering it into the following formula:

$$C = \frac{D}{R}$$

**Example:**

If the stage micrometer was divided into 0.1 mm increments and we have traversed 5 lines as shown in the example on the previous page, then  $D = 5 \times 0.1 = 0.5 \text{ mm}$ .  
 Let us assume that the result on display was 1695 (= R), then  $C = 0.5 \div 1695 = 0.0002949$ ; (mm)  
 If your results are to be expressed in mm, program 0.0002949 into your processor, if they are to be expressed in microns, program 0.2949 into your processor. ( Note : calibration in imperial unit is identical)

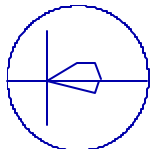
**To program the processor:**

Suppose we want to program the the processors for micron results:

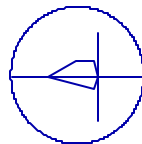
**SM2:** Dial 2949 into the scaler switches, then turn the processor off and on again. 2949 will be shown on display. Now press the decimal button repeatedly until 0.2949 is shown on display.

**M/XM:** Dial 2949 into scale input switches, depress S1 (S2 or S3) and set correct decimal point by pressing the decimal switch repeatedly.

**THE MEASURING PROCEDURE**

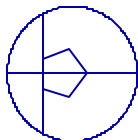


Align the filar reticle with one edge of the specimen to be measured.  
 Clear the display with the Processor Clear Switch

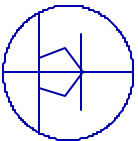


Move the reticle to the opposite edge of the specimen by rotating the knob of the Filar Eyepiece.  
 Find the measuring result on display.

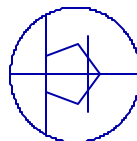
**If you ordered a Filar Eyepiece with the optional stationary reticle line:**



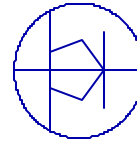
Superimpose the moveable reticle over the stationary one and align it with one edge of the specimen by means of a mechanical stage.



Clear the display and move the reticle to the opposite side.  
 Find result of the first measurement on display.

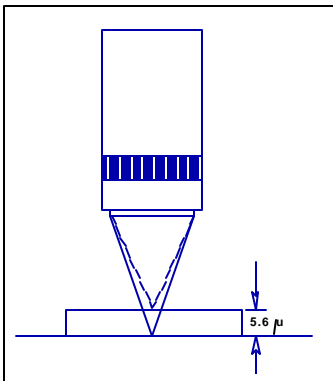


Do not clear the display now and do not move the reticle.  
 Instead, using your mechanical stage, position the edge of your next specimen against the stationary line.



Now move the reticle line to the edge of this object and find result on display. The advantage: You do not have to scan the whole object and there is no need to clear the display.

**DMP ADAPTERS, Z-AXIS ADAPTERS AND CUSTOM DIGITAL CONVERTERS.**



The calibration method is identical to that described above. First you measure a known length/displacement, etc. (=D) with the scaler circuit disabled. (press x 1 if you work with a M/XM or dial 0001 into the scaler switches if you work with a SM2)  
 Enter the result (=R) into the formula  $C = D \div R$  ; Subsequently program C into the processor as described above.

*Example: Z-axis measurement. We use an object with a known thickness of 5.6 microns for calibration. Use a high power objective and focus on the bottom section of the object. Clear display then focus on the top. We assume a result of 952.(=R)  
 Now compute:  $C = 5.6 \div 952 = 0.05882$ ; Dial 5882 into scaler switches, set your decimal and you are ready to make Z-axis measurements with results expressed in microns.*