



Mini Lathe Tachometer- Controller

User's manual

V1.0 2010.01.15

Revision history

Revision	Date	Description of changes
1.0	2010-01-15	Initial revision

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1 Introduction

1.1 Features

Compatibility: 7x10, 7x12, Sieg C2/C3 or similar mini lathe.

Enclosure: Aluminum.

Display: Large 14mm (0.56"), bright LED display

Work diameter: 0.1 to 799.9mm (0.01 to 31.50 in.)

Calculate surface feed per minute (SFM): 0 to 9999

Calculate surface meters per minute (SMM): 0 to 9999

Measure RMP (spindle speed readout): 50 to 9999

Screw cutting control: automatically stops lathe at the ends of thread.
Don't need sensitive manual stop.

1.2 Specifications

Operating temperature: +5 to +35degrees C

Storage temperature: -40 to +85 degrees C

Relative humidity: 0 to 90% (non-condensing)

Power requirements: +6.5 to +12Vdc @ 0.35A (max)

Dimensions L x H x D: 132 x 60 x 40 mm (5.2 x 2.37 x 1.58 in.)

Weight: 250g (8.82oz.)

Motor switches: UL - Cos.=1 AC240V/DC24V 10A

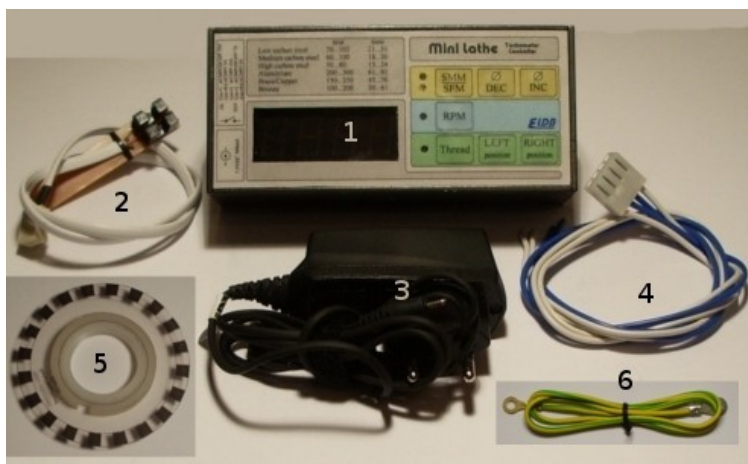
Cos.=0.4 AC240V 5A

TUV - Cos.=1 AC120V 10A

Cos.=1 AC240V/DC24V 7A

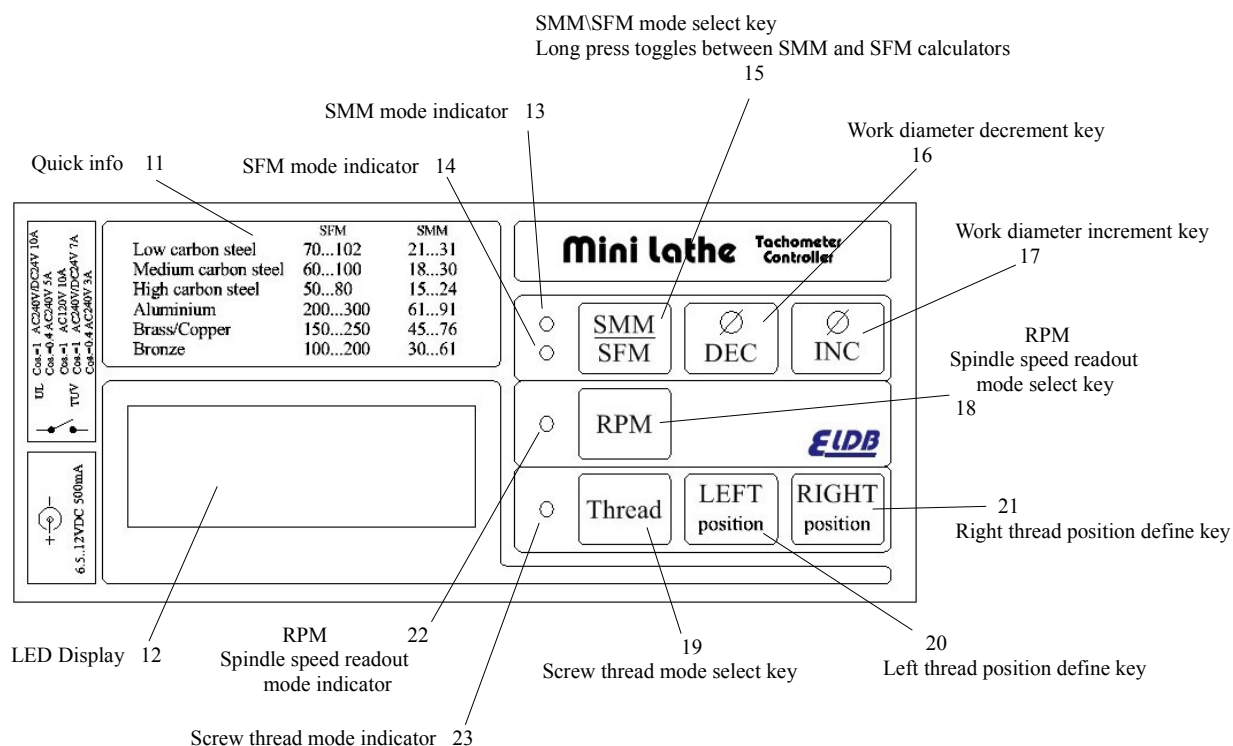
Cos.=0.4 AC240V 3A

1.3 Package contents

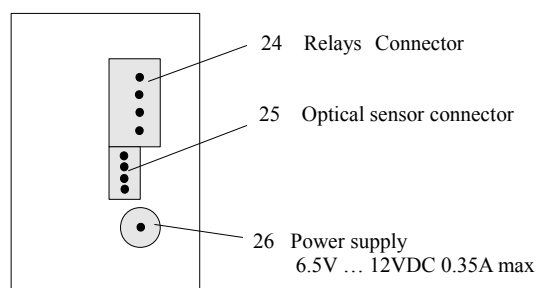


1. Mini Lathe Tachometer - Controller.
2. Optical sensor.
3. Universal AC/DC 100...240V adapter.
4. Cable with connector.
5. Interrupter wheel. 20 teeth. M27 x 1.5
6. PE cable.

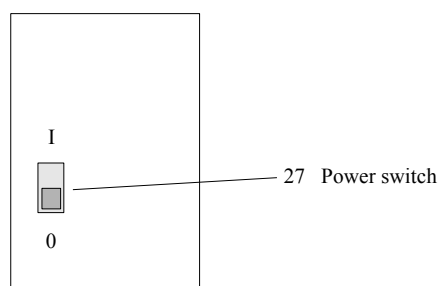
1.4 Front panel



1.5 Left panel



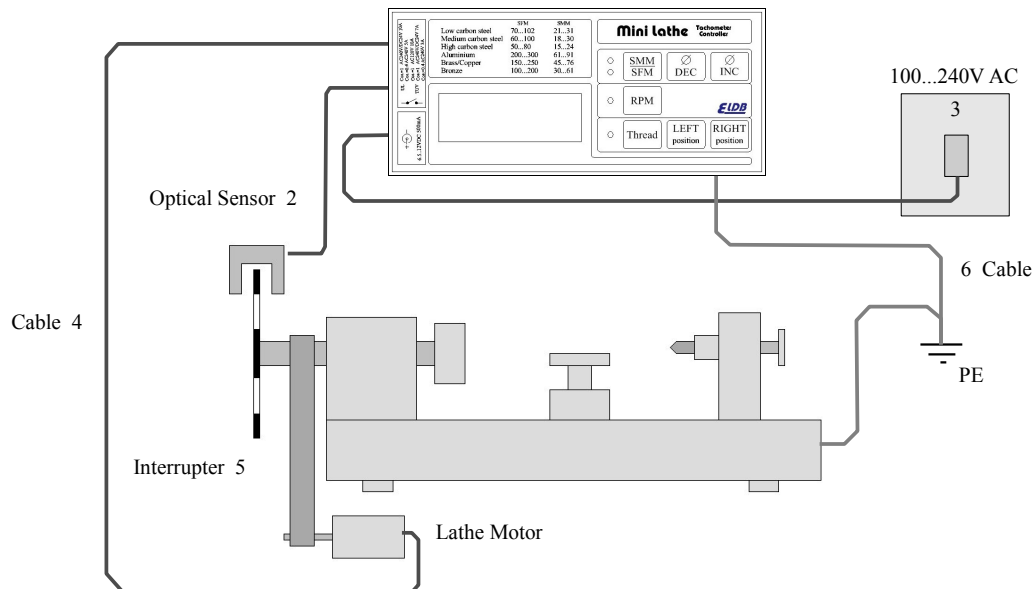
1.6 Right panel



2. Hardware Installation

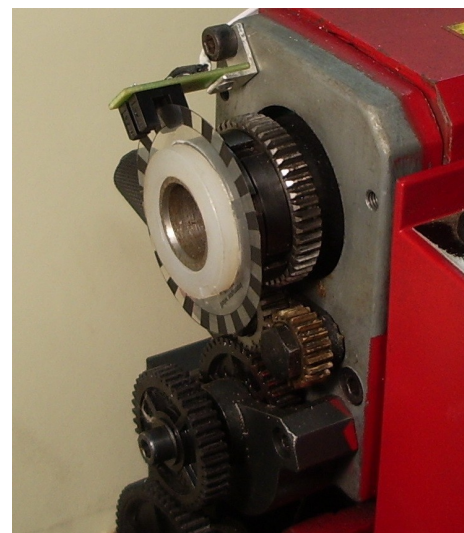
Before hardware installation, ensure the lathe is switched OFF and disconnected from the mains supply.

2.1 Typical system integration



2.2 Interrupter and optical sensor

- Remove the change gear cover.
- Screw up the interrupter wheel (5) on to the spindle.
- Loosen the socket head cap screw at the upper left corner of the drive belt cover.
- Slide the sensor-mounting bracket under the head of the cap screw. Align the sensor over the interrupter wheel and tighten the socket head cap screw.



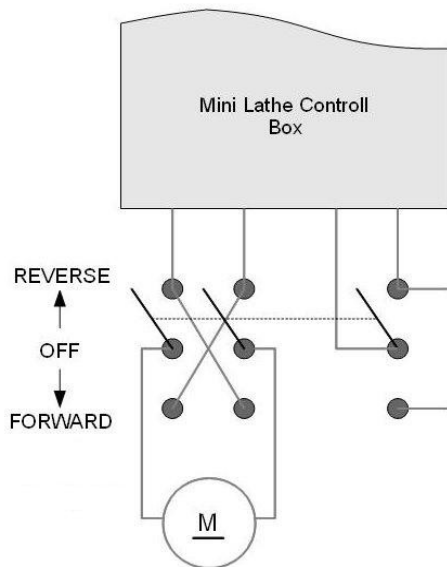
2.3 Lathe motor control

The motor control modification enables screw cutting control. If you don't need this feature skip this paragraph.

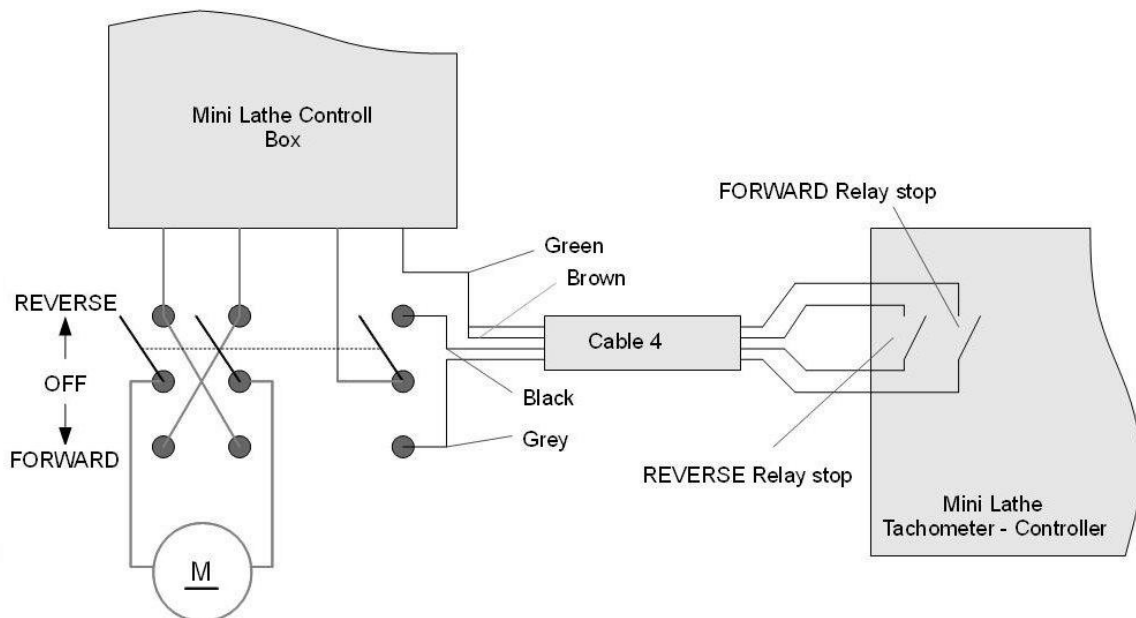
!!! IF YOU HAVE ANY DOUBT, CALL A QUALIFIED ELECTRICIAN !!!

You must change typical mini lathe motor control wiring diagram.

Typical mini lathe motor control wiring diagram before modification.



Mini lathe motor control wiring diagram after modification.



3. Firmware setup

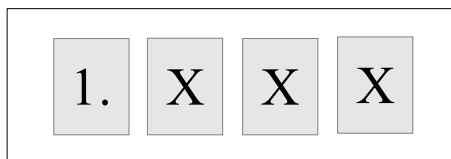
With firmware setup you can change tachometer parameters such as display (12) contrast and interrupter wheel (5) teeth count.

To enter firmware setup mode:

- turn off tachometer (27)
- press and hold SMM/SFM (15) key and turn on tachometer (27)
- after ~5 seconds tachometer enters setup mode

To leave firmware setup mode press and hold SMM/SFM (15) key for ~3 seconds or wait ~10 seconds.

Display in setup mode:



value (use DEC and INC key to change value)

parameter (use SMM/SFM key to change parameter)

Parameter	Description	Value	Default value
1	Display contrast	0...10	10
2	Interrupter wheel teeth count	0...180	20

4. Operation

NOTE: The controller has implemented safe function and if you see displaying the words "OFF" is always check that the “FORWARD/OFF/REVERSE” lathe switch is in the “OFF” position.

4.1 SFM/SMM calculator

Press “SMM/SFM” (15) key to start SMM (surface meters per minute) or SFM (surface feed per minute). Press “SMM/SFM” (15) key and hold to toggle between SMM and SFM calculators. For proper calculations you must setup valid diameter of work. To setup diameter of work use DEC(decrement) or INC(increment) key.

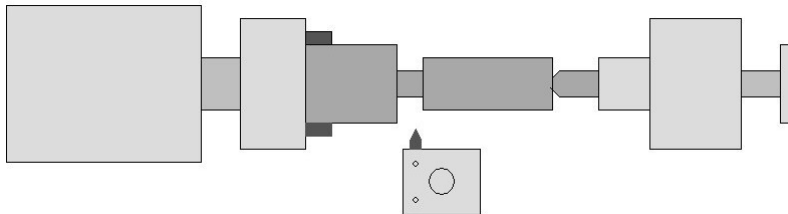
4.2 RPM (spindle speed readout)

Press "RPM" (18) key to start RPM (spindle speed readout) measurement.

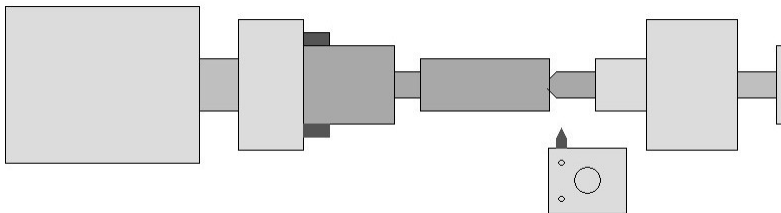
4.3 Screw cutting control

Setup

- Prepare mini lathe for screw cutting.
- Enter screw thread mode by pressing 'Thread' (19) key.
- Move the tool to the left position of the cut.



- Engage the auto-feed half nuts and define left position by pressing “LEFT position” (20) key. Do not disengage the auto-feed half nuts until thread is completed.
- Turn the Forward/OFF/Reverse lathe switch to “Reverse”. As the tool approaches the end of the desired thread, turn the switch to “OFF” and define right position by pressing “RIGHT position” (21) key. Now you can start screw cutting.



Screw cutting

- Set your required depth of cut. Turn the Forward/Off/Reverse lathe switch to “Forward”. Controller automatically stops lathe at the left position.
- Turn the switch to “OFF”. Retract the tool, using the cross-slide feed handle, noting the exact position on the scale and the exact number of turns. Turn the switch to “Reverse”, the saddle winds back. Controller automatically stops lathe at the right position. Turn the switch to “OFF”.
- Reset the tool by winding IN the cross-slide the exact number of turns previously wound OUT and then continue to wind IN the to the desired depth of cut.
- Repeat the screw cutting steps. Proceed in this manner until the thread is completed.

For more information refer to the video clips at the <http://www.eldb.eu/tachometer.html>