Installation Requirements for the Risø TL/OSL-DA-20 Luminescence reader

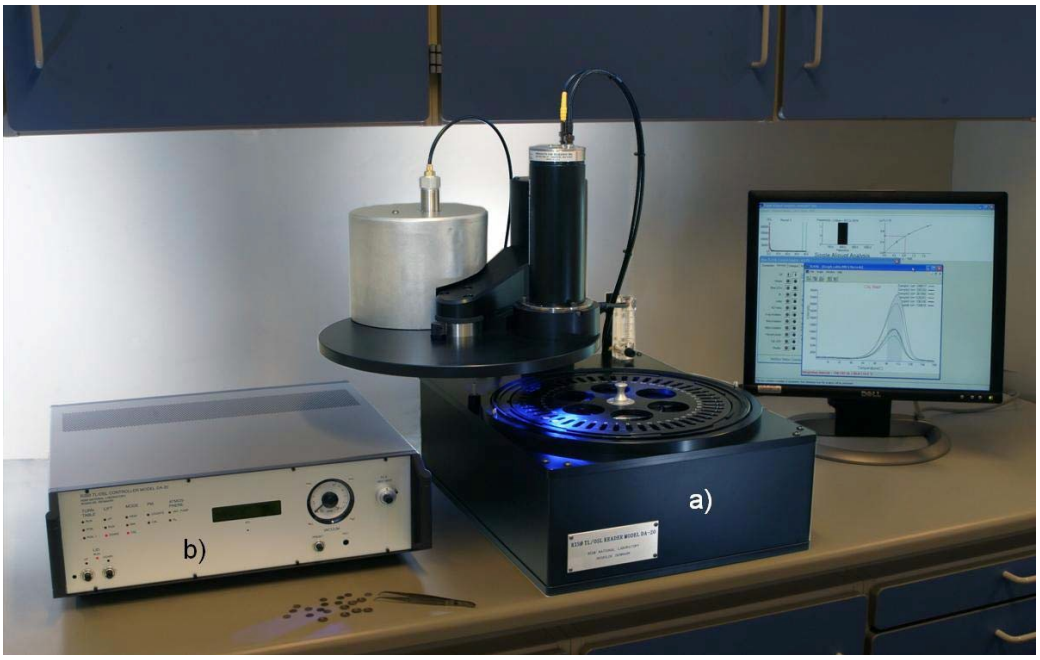


Figure 1 Picture of the Risø TL/OSL reader. a) The Reader. b) The Controller

1. Recommended bench space: 180 cm × 65 cm × 60 cm (length*depth*height)

The Risø TL/OSL reader consists of two separate units:

a) The Reader (40 cm × 55 cm × 55 cm)
b) The Controller (50 cm × 55 cm × 20 cm)

The system weighs about 90 kg and must be placed on a flat, stable surface at least 90 cm long. The system is run using a standard PC (usually supplied by the customer). If this PC is also placed on the work bench, we recommend that an additional bench space of 90 cm is available, bringing the total recommended bench space to 180 cm.

If the Risø system is equipped with a beta source then it is recommended that the Controller is placed on the left side of the reader (see Figure 1) to prevent this desk space from being used as work space. When the source is irradiating the external dose rate can be ~100 μSv/h directly on the reader surface.

It is further recommended that the reader is positioned in such a way that the space underneath the reader is inaccessible (the dose rate underneath a wooden table with a thickness of 25 mm is < 3 μSv/h when the source is inactivated and < 40 μSv/h when the source is activated).

Risø, February 2020

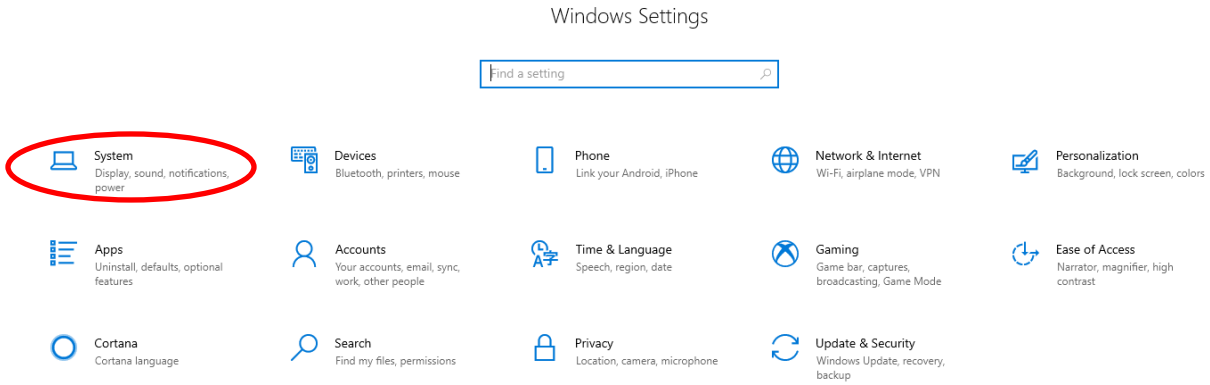
2. Recommended PC configuration for the TL/OSL reader

PC with Windows XP or later versions installed.

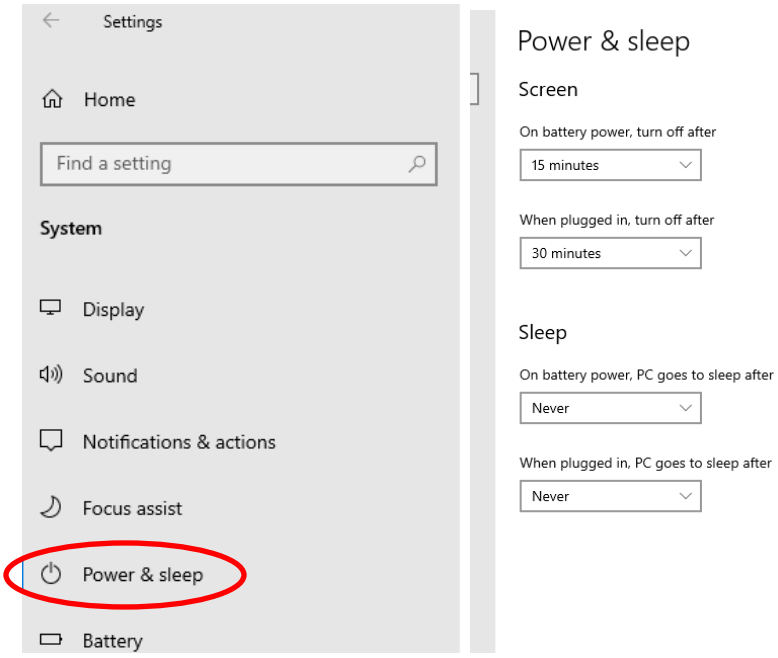
PC must never enter sleep mode, harddrive must never be turned off and USB not suspend. In order to ensure this, the power settings must be set properly.

How to change power settings (Window 10):

Open the Systems settings from Windows menu.

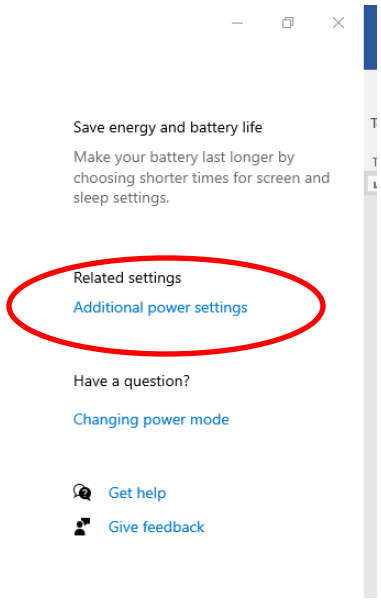


Open Power and sleep settings:

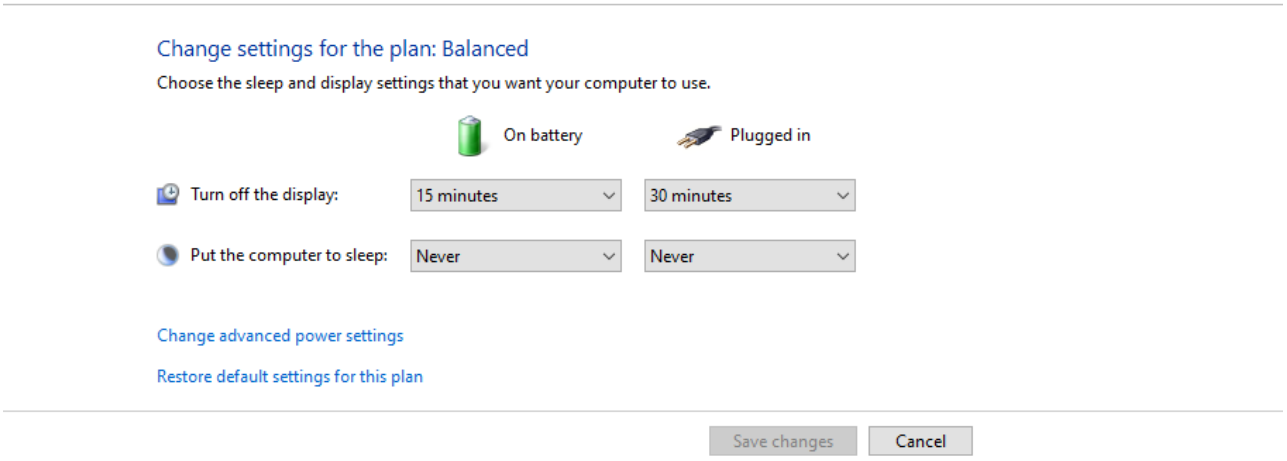


Screen settings are ok like this

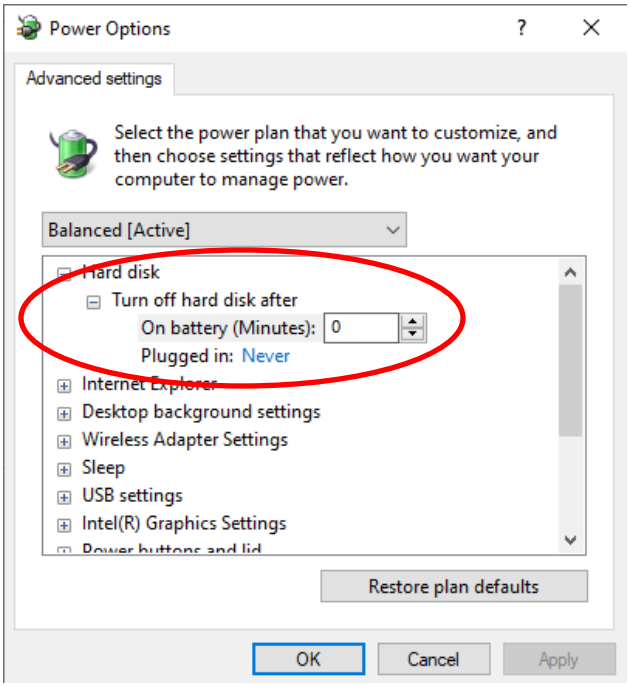
Choose Additional Power settings.



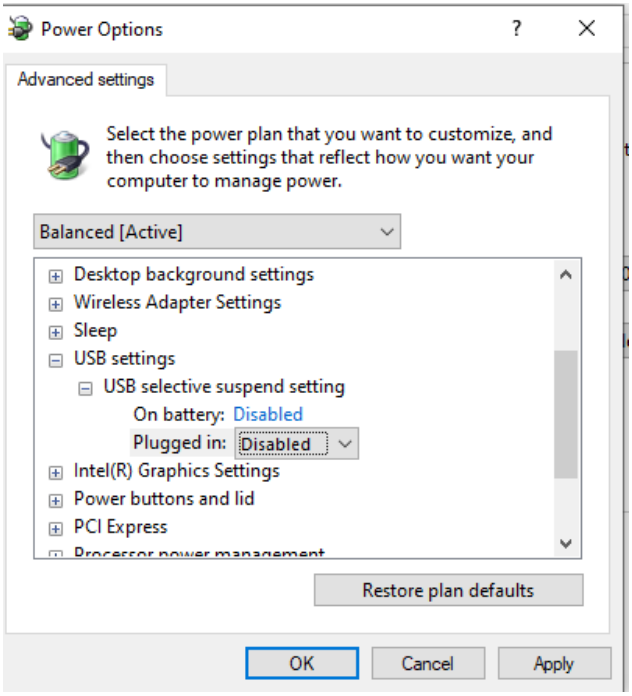
Choose “Change advanced power settings”



Choose Turn off hard disk after (plugged in) NEVER



Scroll down to USB settings, choose disabled



3. User PC language option

It is very important that the user PC is using a "." (full stop) as decimal separator and not a "," (comma). This is setup in the Control Panel/Regional and Language Options. Most continental language options (e.g. German and French) will use the ","" as a separator whereas all English language options (and many others) will use a ".". If the decimal separator is not a "." then an error massage will appear when the system is run (Error 112).

4. Power requirements

In order to power the Risø system the user must supply a single local power plug that plugs into the power socket available in the laboratory.
If power failure is known to occur the use of a battery driven 500 W UPS
(Un-interruptible power supply) is recommended, to ensure that you have a reliable supply of power.

5. Laboratory light recommendations

In OSL laboratories it is recommended to use subdued red/orange light during sample handling (Sohbati *et al.*2017).

If fluorescent tubes are used in the laboratory or the immediate area (e.g. corridors) it is strongly recommended that electronic starters are fitted. Glow switches emit electromagnetic noise that can be picked up by the PMT preamplifier and thus result in unwanted noise in the measurements.

The Risø TL/OSL reader is light tight enabling the use of normal white light during measurement. It is recommended that the light switch for white light is placed high on the wall to avoid the risk of switching on white light while samples are being prepared.

6. Laboratory climate

The PMT is sensitive to temperature and humidity. The laboratory temperature should not exceed 30°C and the humidity should be below 80%.

Avoid air flow between the chemical sample preparation room and the reader room. Over time acid fumes will damage the electronic components inside the reader.

7. Nitrogen requirements

Pressurized nitrogen is required when samples are heated above 200°C and to activate the pneumatically-controlled beta and alpha irradiators. A pressure regulator must be provided that can maintain a stable output pressure of 2.5 bar. 1/4" NPT threads will fit the nitrogen tube connectors provided by Risø.

The consumption of nitrogen for activating the pneumatically-controlled beta and alpha irradiators is very small, but if a compressed air installation already exists in your laboratory you may chose to chose to feed the source control from a separate compressed air source. The user manual (Guide to "The Risø TL/OSL Reader") explains how to do this.

8. Alpha source irradiation

If the Risø TL/OSL reader is equipped with an alpha source the measurement chamber should be evacuated before alpha irradiation is undertaken. Evacuating the chamber to about 0.1 bar is usually sufficient. The vacuum pump must have a KF NW 25 connection and a maximum power consumption of 500 W (e.g. the Leybold Trivac Leybold DB4 vacuum pump with an AR 4-8 Exhaust filter from Granzow A/S (www.granzow.dk)). It is also desirable to fit an oil mist filter to avoid air pollution in the laboratory. Risø supplies the tube connecting the pump to the reader, and the required fittings.

9. Heavy liquid separation

It is often desirable to isolate a specific mineral from a mixed sample. This can be done by exploiting density differences between minerals suspension in heavy liquid. Heavy liquids are solutions of varying density and can be prepared by for instance mixing Sodium Polytungstate with distilled water. A commonly used heavy liquid is LST Fastfloat from Pangea UK (www.polytungstate.co.uk).

10. Adhesive Spay

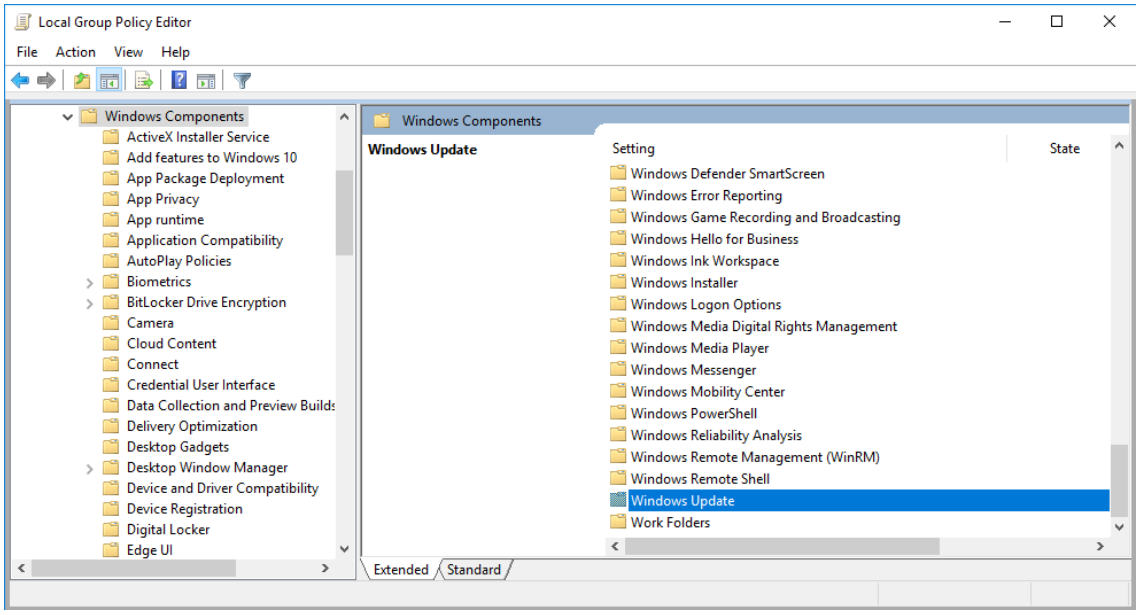
Sample grains can be mounted on the stainless steel sample discs (0.5 mm thick and 9.7 mm in diameter) using an adhesive aerosol spray, e.g. SilkoSpray from Rüsch, Germany (www.ruesch.de).

11. Settings for running the RISØ software.

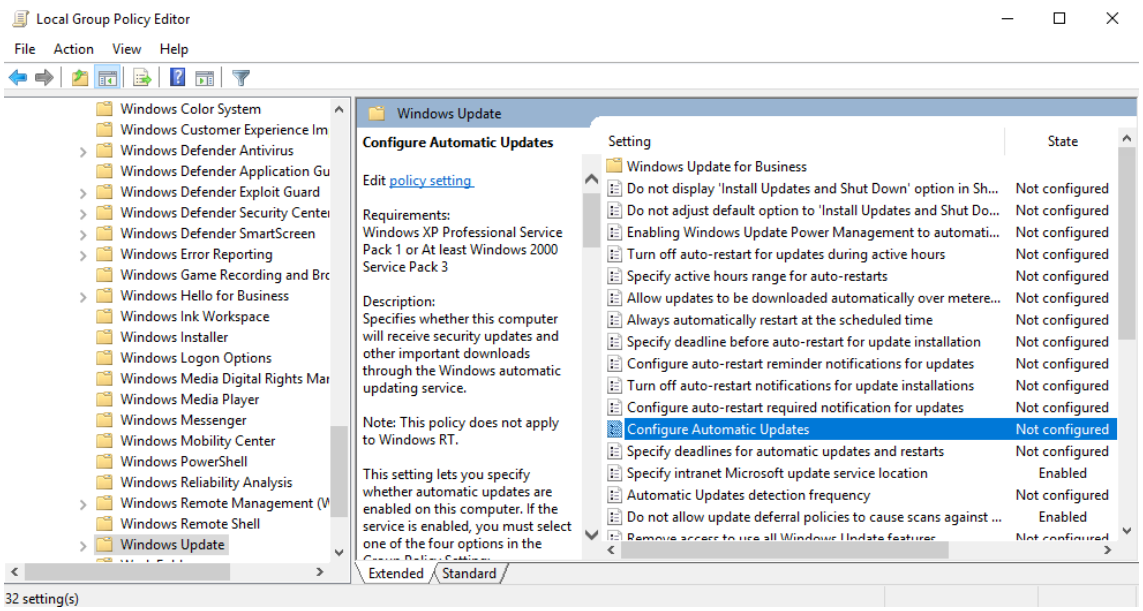
(WIN7-WIN10)

Turn off Windows Updates using Group Policy editor:

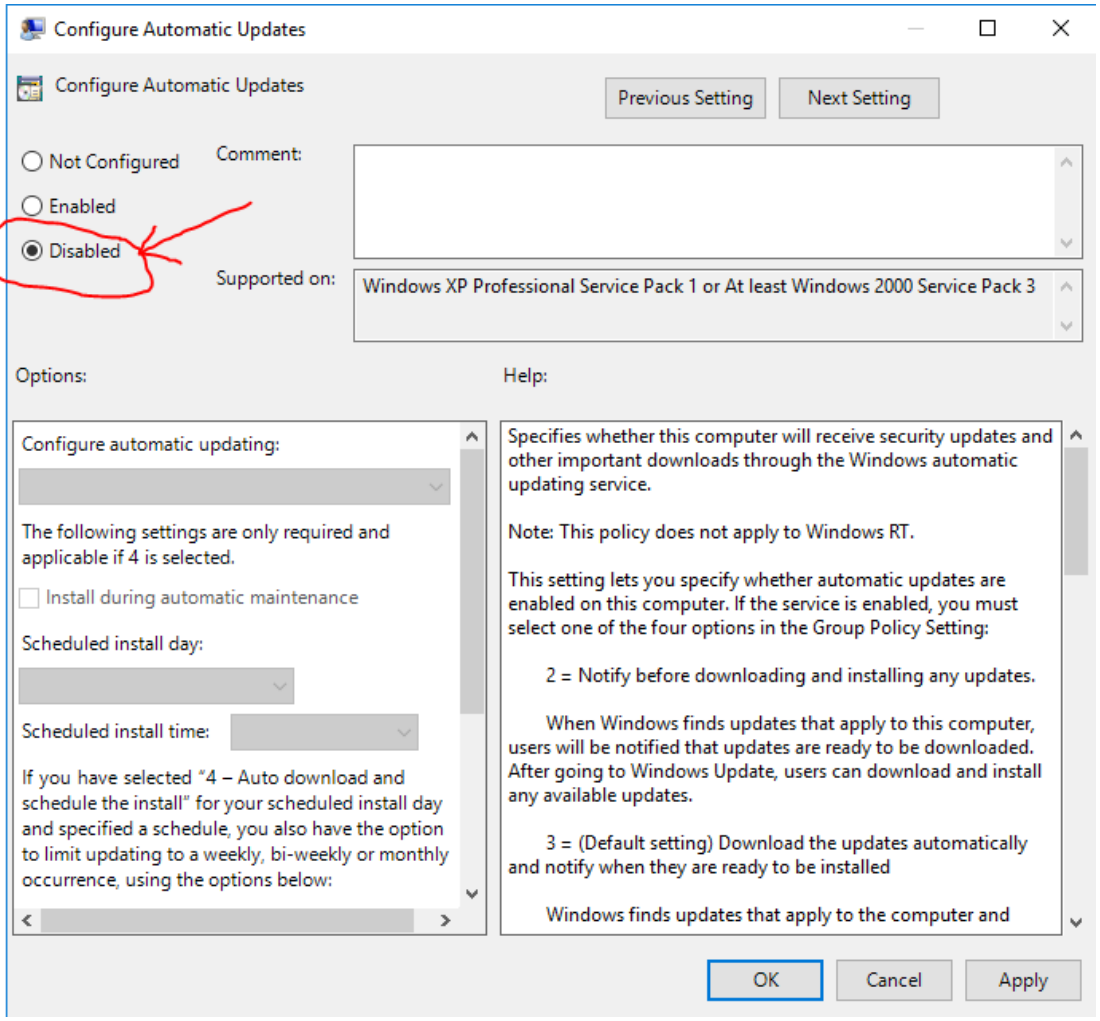
Open Group Policy Editor (Run –> gpedit.msc)
Go to **Computer Configuration –> Administrative Templates –> Windows Components –> Windows Update**



In the main frame, double-click the option **"Configure Automatic Updates."**



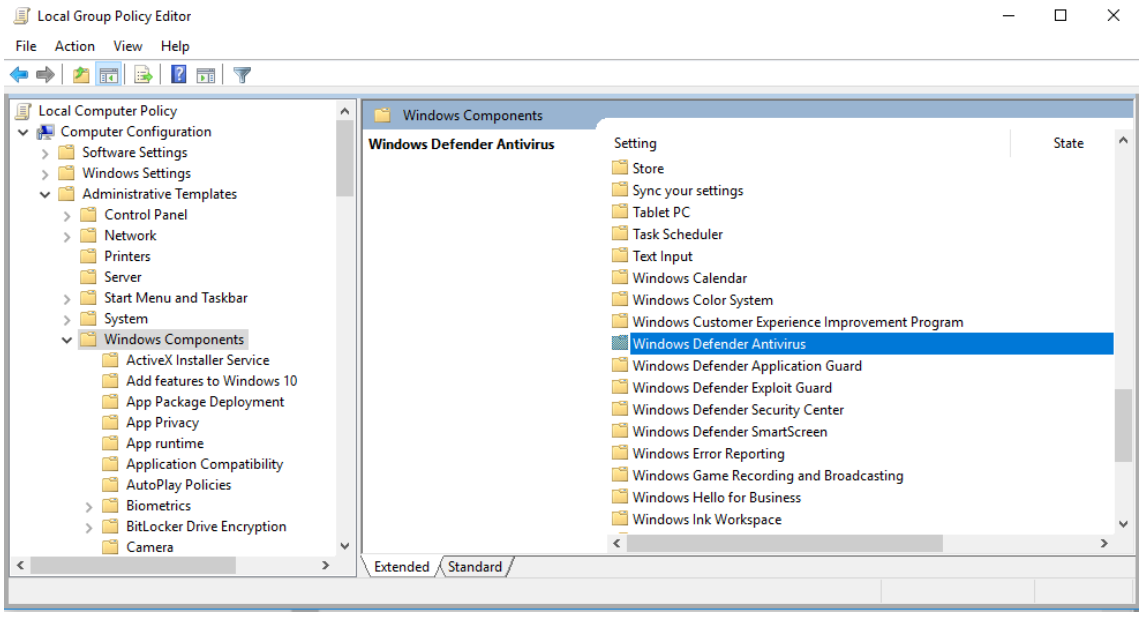
Select "Disabled" to turn off automatic updates.



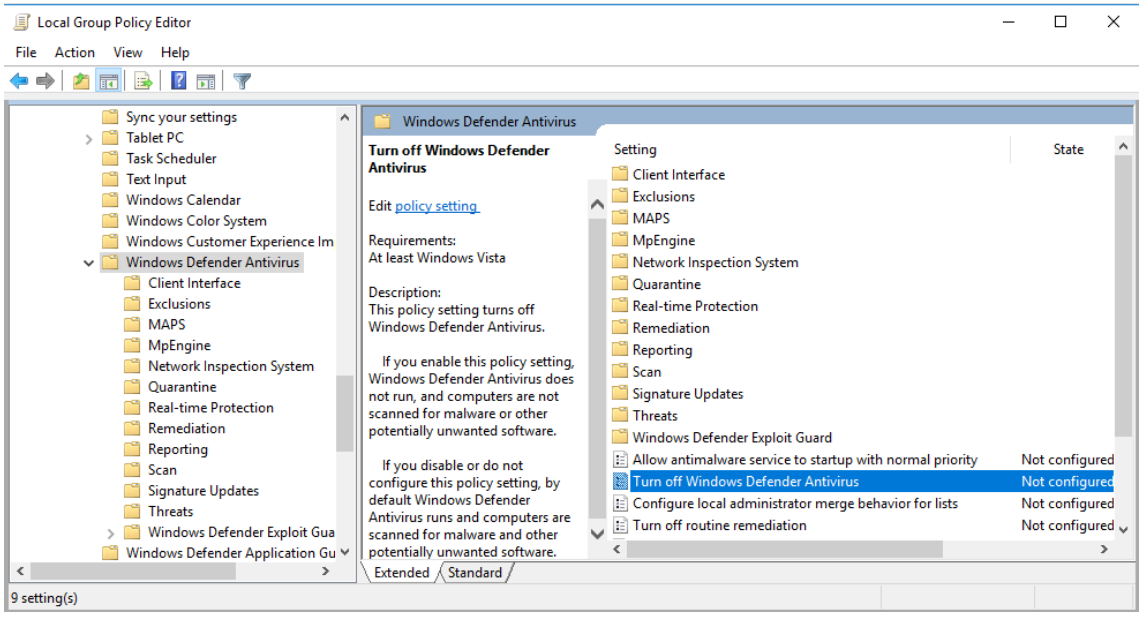
Press Apply and ok
Proceed to "*Turn off Windows Defender using Group Policy editor*" or
Close the Group Policy editor.
Restart the computer.

Turn off Windows Defender using Group Policy editor:

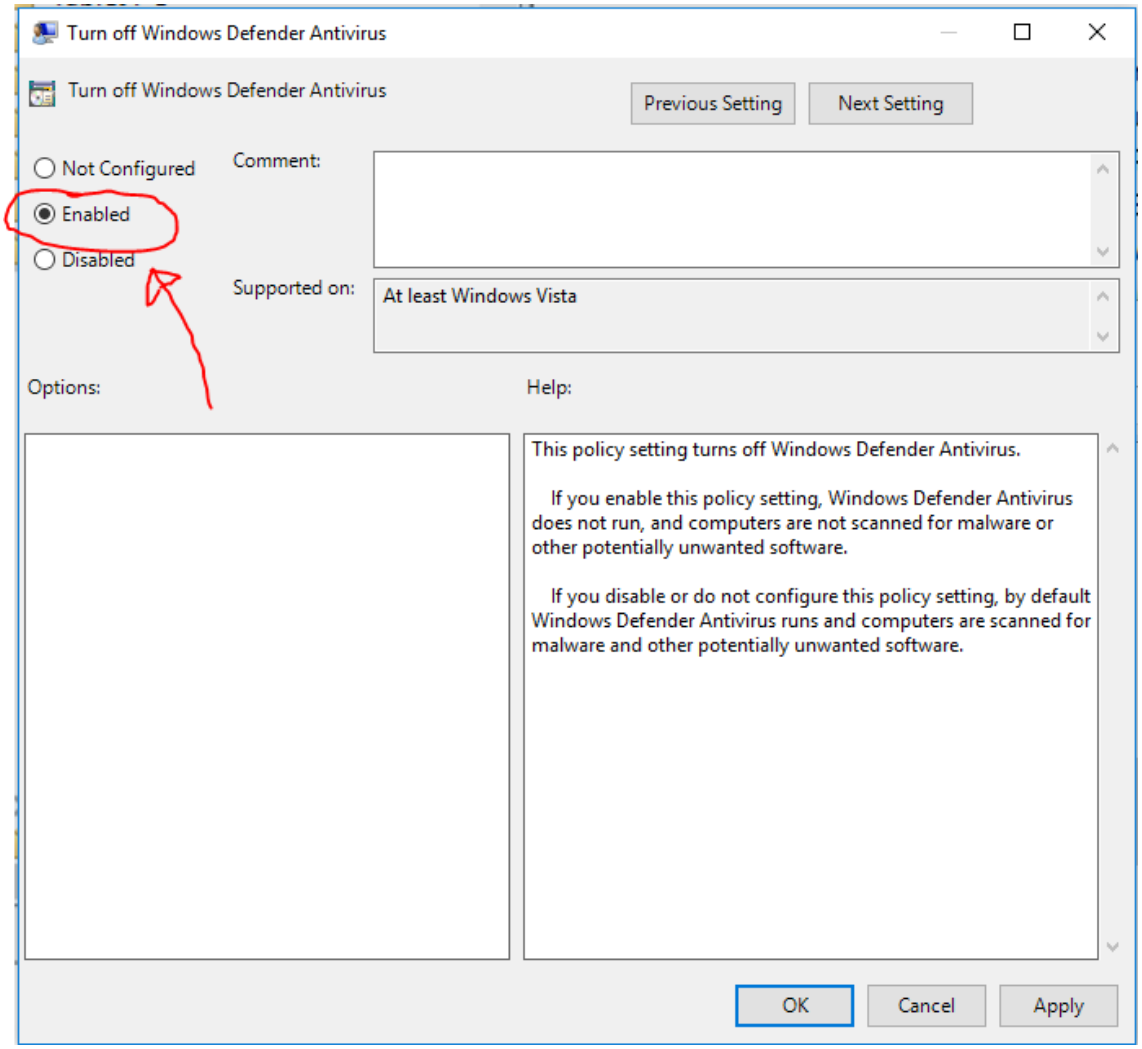
Open Group Policy Editor (Run –> gpedit.msc)
Go to **Computer Configuration –> Administrative Templates –> Windows Components –> Windows Defender Antivirus**



In the main frame, double-click the option **"Turn off Windows Defender Antivirus"**



Select "Enabled" to turn off Windows Defender Antivirus.



Press Apply and ok
Close the Group Policy editor.
Restart the computer.