

Central Office of Measures

<https://www.gum.gov.pl/en/redefinicja-si/si-redefinition/257,SI-redefinition.html>
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SI redefinition

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The main challenges facing the modern world today are measurable. We measure the world in seconds, meters, kilograms or amps. In the overwhelming majority of countries we use the International System of Units of Measure (SI), which integrates almost the whole world into a coherent metrological whole.

Consistent, uniform metrology takes care of our health, environment, trade, science, technology and safety. However, modern metrology faces a new challenge: the redefinition of SI, which will make metrology ready to meet the demands of modernity in the 21st century.

Basic constants

$\Delta\nu_{Cs}$	$9\,192\,631\,770\text{ s}^{-1}$
c	$299\,792\,458\text{ m s}^{-1}$
h	$6,626\,070\,15 \times 10^{-34}\text{ J s (J s = kg m}^2\text{ s}^{-1}\text{)}$
e	$1,602\,176\,634 \times 10^{-19}\text{ C (C = A s)}$
k	$1,380\,649 \times 10^{-23}\text{ J K}^{-1}\text{ (J K}^{-1} = \text{kg m}^2\text{ s}^{-2}\text{ K}^{-1}\text{)}$
N_A	$6,022\,140\,76 \times 10^{23}\text{ mol}^{-1}$
K_{cd}	683 lm W^{-1} (dla monochromatycznego promieniowania o częstotliwości $540 \times 10^{12}\text{ Hz}$)

SI Units

1 s	$9\,192\,631\,770/\Delta\nu_{Cs}$
1 m	$(c/299\,792\,458)\text{ s} \approx 30,663\,319\text{ c}/\Delta\nu_{Cs}$
1 kg	$(h/6,626\,070\,15 \times 10^{-34})\text{ s m}^2$ $\approx 1,475\,521... \times 10^{40}\text{ h } \Delta\nu_{Cs}\text{ c}^{-2}$
1 A	$(e/1,602\,176\,634 \times 10^{-19})\text{ s}^{-1}$ $\approx 6,789\,687 \times 10^8\text{ } \Delta\nu_{Cs}\text{ e}$
1 K	$(1,380\,649 \times 10^{-23}/k)\text{ kg m}^2\text{ s}^{-2}$ $\approx 2,226\,6653\text{ } \Delta\nu_{Cs}\text{ h k}^{-1}$

$$\begin{aligned} 1 \text{ mol} & 6,022\,140\,76 \times 10^{23} N_{\text{A}}^{-1} \\ 1 \text{ cd} & (K_{\text{cd}}/683) \text{ kg m}^2 \text{ s}^{-3} \text{ sr}^{-1} \\ & \approx 2,614\,830 \times 10^{10} (\Delta\nu_{\text{Cs}})^2 h K_{\text{cd}} \end{aligned}$$

[Information on the SI redefinition is also available on the BIPM website.](#)