Appendix D
Parameters of Renewable Energy Power Plants

D.1. Physical constants

Physical constants and values related to the standard test condition (STD) of PV cells used in the renewable energy power plant models are given in Table D.1.

Table D.1: Physical constants

Symbol	Value	Unit	Description
ρ	1.225	$\frac{\text{kg}}{\text{m}^3}$	air density at 15°C
k	1.381×10^{-23}	J/K	Boltzmann constant
q	1.6×10^{-19}	$\frac{\text{kg}}{\text{m}^3}$	unit charge
S_{STC}	1000	$\frac{\text{W}}{\text{m}^2}$	irradiation at standard test condition (STC)
$T_{c,STC}$	298	°K	PV cell temperature at STC
$v_{T.STC}$	25.7	mV	thermal voltage of p-n junction at STC