LIST OF SYMBOLS AND ABBREVIATIONS

i_{Da}	Average current through Diode D
$i_{L_{2a}}$	Average current through inductor L_2
K	Boltzman constant
Δv_{c_1}	Capacitor ripple voltage of capacitor C_1
Δv_{c_2}	Capacitor ripple voltage of capacitor C_2
C_1 and C_2	Capacitors
$CE(k)$	Change in Error
k_1, k_2 , k_3 and k_4	Coefficients
Δt_1	Conduction time
k_c	Coupling coefficient
I	Current
$I_{C_{2(RMS)}}$	Current (RMS) through the capacitor C_2
I_{mp}	Current at P_{max}
i_{C_1}	Current through capacitor C_1
i_{C_2}	Current through capacitor C_2
I_D/ i_D	Current through diode D
i_{L_1}	Current through Inductor L_1
i_{L_2}	Current through Inductor L_2
i_s	Current through switch
L	Delay time
Td	Derivative time
D_1	Diode
V_D	Diode voltage drop
d	Duty cycle
d_{max}	Duty cycle (maximum)

d_{min}	Duty cycle (minimum)
η	Efficiency
q	Electric charge
E	Error
$e(k)$	Error value
x_i	Error variable
$\dot{x}$	Error variable derivative
k^T	Essential condition for sliding surface
$\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4,$	Feedback errors for current through inductor L_1, L_2 , Voltage across the capacitors C_1 and C_2
Q_{GD}	Gate drain charge
I_G	Gate drive current
V_g	Generated voltage
A	Ideality factor
ΔI	Incremental current
ΔV	Incremental voltage
L_1	Inductor L_1
$I_{L_{1(peak)}}$	Inductor L_1 peak current
L_2	Inductor L_2
$I_{L_{2(peak)}}$	Inductor L_2 peak current
ΔI_L	Inductor ripple current
Δi_L	Inductor ripple current
L_{1a}	Inductor SEPIC-I
I_{in} / i_{in}	Input current
i_{L_1}	Input current(calculated)
P_i	Input Power
r_i	Input resistance
$v_{in} / Vi / V_{in}$	Input voltage

$V_{i(max)}$	Input voltage (maximum)
$V_{i(min)}$	Input voltage (minimum)
$E(k)$	Instantaneous error
$P(k)$	Instantaneous power
$V(k)$	Instantaneous voltage
t_i	Integral time
Ti	Integral time
R	Load resistance.
P_{max}	Maximum Power
M_i	Mutual inductance
N_1	Number of turns in primary winding
N_2	Number of turns in secondary winding
$\Delta t_2, T_{OFF}$	Off time
Δt_1 , T_{ON}	On time
V_{oc}	Open circuit voltage
T_o	Operating temperature
Vo_1	Output voltage across SEPIC-I in PSEPIC
i_o	Output current
I_{PV}	Output current from Photo voltaic
P_o	Output Power
r_g	Output resistance
$U(t)$	Output response
v_o / V_o	Output voltage
Vo_2	Output Voltage across SEPIC-II in PSEPIC
V_{PV}	Output voltage from Photo voltaic
R_p	Parallel resistance
I_{ph}	Photo generated current
P_s	Power dissipation of MOSFET

kp	Proportional gain
$i_{L_{1ref}}$	Reference current through the inductor L_1
$i_{L_{2ref}}$	Reference current through the inductor L_2
$i_{L_{1ref\,(\max)}}$	Reference current(maximum) through the inductor L_1
x^*	Reference variable
$Vref$	Reference voltage
$v_{c_{1ref}}$	Reference voltage for capacitor C_1
$v_{c_{2ref}}$	Reference voltage for capacitor C_2
$v_{c_{1ref\,(\max)}}$	Reference voltage(maximum) for capacitor C_1
$v_{c_{2ref\,(\max)}}$	Reference voltage(maximum) for capacitor C_2
R_{DS}	Resistance between drain and source
I_r	Reverse saturation current of diode
V_{RD}	Reverse Voltage of diode (minimum)
r_i	Ripple current in inductor
$I_{s(RMS)}$	RMS current of switch
k	Sampled time
R_{se}	Series resistance
I_{sc}	Short circuit current
R_{sh}	Shunt resistance
δ	Small positive quantity
$\dot{x}_1, \dot{x}_2, \dot{x}_3$ *and* $\dot{x}_4$	State variable derivatives
x_1 ,x_2, x_3 *and* x_4	State variables
γ	Status of the switch
$s(x)$	Status of the switch
$\dot{s}(x)$	Status of the switch derivative
S/S_1	Switch
Is_1	Switch current
$I_{s(peak)}$	Switch current (peak)

v_s	Switch pulse
f_s	Switching frequency
$f_{s(min)}$	Switching frequency (minimum)
T	Switching period
T_S	Switching period
V_{thmin}	Threshold voltage (minimum)
T_c	Time constant
V	Voltage
v_{c_1}	Voltage across the capacitor C_1
v_{c_2}	Voltage across the capacitor C_2
V_{L1OFF}	Voltage across the inductor L_1 when the switch OFF
V_{L1ON}	Voltage across the inductor L_1 when the switch ON
V_{mp}	Voltage at P_{max}
M	Voltage conversion ratio

ABBREVIATIONS

ANN	Artificial Neural Network
CCM	Continuous Conduction Mode
D	Derivative
DSO	Digital Storage Oscilloscope
DCM	Discontinuous Conduction Mode
EMI	Electro Magnetic Interference
ESR	Equivalent Series Resistance
FLC	Fuzzy Logic Controller
GRNN	General Regression Neural Network
GD	Gradient Descent
HID	High-Intensity Discharge
IC	Incremental Conductance
IVS	Input Voltage Sharing
I-TS-DI-SEPIC	Isolated Time Sharing Dual Input SEPIC
KCL	Kirchhoff’s Current Law
KVL	Kirchhoff’s Voltage Law
LVS	Low Voltage Side
MV	Manipulated Variable
MPP	Maximum Power Point
MPPT	Maximum Power Point Tracking
MOVR	Minimum Value of Output Voltage Ripple
c-Si	Mono crystalline Silicon
NB	Negative Big
NS	Negative Small
NN	Neural Network
PSEPIC	Parallel Single Ended Primary Inductor Converter
P&O	Perturb & Observe

PV	Photo Voltaic
PB	Positive Big
PS	Positive Small
PFC	Power Factor Control
PIC	Primary Inductor Converter
PrV	Process Variable
PI	Proportional –Integral
PID	Proportional Integral Derivative
PWM	Pulse Width Modulation
SP	Set Point
SEPIC	Single Ended Primary Inductor Converter
SMC	Sliding Mode Controller
SMPS	Switching Mode Power Supply
TE	Thermo Electric
UPS	Uninterrupted Power Supply
VSI	Voltage Source Inverter