TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS AND ACRONYMS

A	-	Eigenvalues' diagonal matrix of the state matrix
ANN	-	Artificial neural network
c_1	-	Constant weighting factor related to pbest
c_2	-	Constant weighting factor related to gbest
D	-	Damping coefficient
$E_q^{'}$	-	q-axis transient electro-motive forces
$E_d^{'}$	-	d-axis transient electro-motive forces
E_{fd}	-	Excitation voltage
EGAT	-	Electricity Generating Authority of Thailand
FACTs	-	Flexible AC Transmission Systems
FDPF	-	Fast Decoupled Power Flow
gbest	-	Global best
GSMD	-	Grid System Division Management
GUI	-	Graphical user interfaces
H	-	Inertia constant
HVDC	-	High Voltage Direct Current
HVAC	-	High Voltage Alternating Current
I_d	-	d-axis armature currents
I_q	-	q-axis armature currents
$\underline{I}_G$	-	Complex vector of currents in subsystem
J	-	Jacobian matrix
K_A	-	Voltage regulator gain
K_E	-	Exciter constant

K_F	-	Stabiliser gain
LM	-	Levenberg-Marquardt algorithm
M	-	Inertia coefficient
P	-	Active power
pbest	-	Personal best
P_m	-	Mechanical input power, MW
PSS	-	Power System Stabiliser
PSCAD/ EMTDC	-	Power System Computer Aided Design/ Electromagnetic Transient for Direct Current
PSDYNET	-	Power System Dynamic Equivalents Toolbox
PSO	-	Particle Swarm Optimisation algorithm
PSS™NETOMAC	-	Power System Simulator Network Torsion Machine Control
p.u.	-	Per unit system
Q	-	Reactive power
rand()	-	Random number between 0 and 1
R_S	-	Stator resistance
S_E	-	Exciter saturation function value
SESCO	-	Sarawak Electricity Supply Corporation
SVC	-	Static VAR compensator
s_i^k	-	Position of particle *i* at iteration *k*
s_i^{k+1}	-	Position of particle *i* at iteration *k+1*
T_A, T_B, T_C	-	Voltage regulator time constants
$T_{do}^{'}$	-	d-axis open-circuit time constant
$T_{qo}^{'}$	-	q-axis open-circuit time constant
$T_{\max}$ and $T_{\min}$	-	Maximum and minimum turbine outputs, p.u.
TNB	-	Tenaga Nasional Berhad
TNBR	-	TNB Research Sdn. Bhd.
T_R	-	Input filter time constant
T_S	-	Governor time constant, sec.
V_T	-	Terminal voltage

v_i^k	-	Velocity of particle *i* at iteration *k*
v_i^{k+1}	-	Velocity of particle *i* at iteration *k+1*
V_{err}	-	Terminal voltage error signal
$\underline{V}_G$	-	Complex vector of generator voltages in subsystem
V_{SI}	-	Power system stabiliser input signal
X	-	State vectors of subsystem
X_d	-	d-axis synchronous reactance
$X_d^{'}$	-	d-axis transient reactance
$X_d^{''}$	-	d- axis subtransient reactance
X_q	-	q-axis synchronous reactance
$X_q^{'}$	-	q-axis transient reactance
$X_q^{''}$	-	q- axis subtransient reactance
Y	-	Network admittance matrix
z	-	Modal components' vector of the state variables
δ	-	Power angle position, degree
Δ	-	Deviation
ΔI_f	-	Injected current deviation vectors at the interconnection buses
ΔV_f	-	Voltage deviation vectors at the interconnection buses
ε	-	Tolerance
γ	-	Inverter side extinction angle, degree
ψ	-	Armature flux linkages
$\hat{\gamma}$	-	Demapping component
ω	-	Machine angular speed, rad/s
θ	-	Rotor angle, degree or terminal bus angle, degree
$\hat{\varphi}$	-	Mapping component

LIST OF APPENDICES