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LIST OF SYMBOLS AND ABBREVIATIONS

The following is abbreviations and symbols are used in this document:

Symbol	Description
CT	Current Transformer
ALF	Accuracy Limit factor
RALF	Rated Accuracy limits factor
MATLAB	Mathematical Laboratory
GUI	Graphical user interface
GUIDE	Graphical User Interface Development Environment
PMU	Pencawang Masuk Utama
TNBE	Tenaga National Board Engineering
EHV	Extra High Voltage
SF	Safety factor
P	Protection
IDMT	Inverse Definite Minimum Time
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers

BS	British Standard
EMF	Electromotive Force
RMS	Roots Means Square
I_s, I_1	Secondary Current
I_p, I_2	Primary Current
I_m	Induction Current – Magnetizing Current
Ψ_p	Primary magnetic flux
B_p	Induction
Ψ_s	Secondary magnetic flux
Ψ_m	Total linked flux (coil flux)
U_m	Induced voltage on the secondary CT
Φ_P	Primary Core flux
μ_0	Absolute permeability = $4\pi \cdot 10^{-7}$ H/m
μ_r	Relative permeability of the material
ℓ_{Fe}	Length of Magnetic path

A_{Fe}	Core Cross-Sectional Area
w_p	Number of primary Winding
Φ_s	Secondary Core flux
w_s	Number of Secondary Winding
θ	The angle of fault inception
Φ	Flux Density of the Core
B	Magnetic flux density
Φ_m	Magnetizing flux in the Core
I_{pn}	Primary Nominal Current
I_{sn}	Secondary Nominal Current
K_n	Current Ratio of the primary and Secondary
L	Shunt Inductance of the Current Transformer
U_m	Magnetizing curve
V_s	Source Voltage
V_k	Required CT knee-point voltage

I_F	Maximum secondary through fault current
I_N	Rated CT secondary Current - Relay nominal rated current
R_{sr}	External stabilizing resistance
R_p	Maximum loop lead resistance between CTs and relay
I_r	Relay setting Current
V_{sA}	Actual Voltage setting
E_2	Internal EMF
U_2	Voltage drop across the connection Burden
VA	Relay Burden Setting - Rated burden in Volts – amps
X/R	Primary system reactance/resistance ratio
K_{Rem}	Over dimensioning factor that considers the reamance
K_r	Reamance factor
R_{CT}	Resistance of current transformer secondary winding
X_S	Source Reactance
X_L	Line Reactance
R_S	Source Resistance

R_L	Lead Resistance between the CTs and relays
R_B	Total external load resistance
P_i	Internal Burden of the CT
P_N	Rated CT Burden
P_B	Actual connected burden
T_S	DC time constant of the affected fault loop/Secondary CT times Constant
T_N	System Time Constant
T_p	L/R is the primary time constant
q	$L_2/(L_0 + L_2) \approx L_2/L_0$ is the ratio of inductances
ω	System angular frequency
$t_{M,t}$	Increase of flux is limited is the time
K_T	Over Dimensioning Factor
K_{TF}	Transient over Dimensioning
B_m	Max. Magnetic flux density
R_N	Rated CT resistance