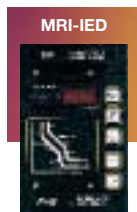
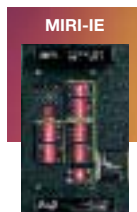


# Transformer/Feeder Protection Selection Table

Relay Reference	MR-I		MR-IE		MRI-IE		FVD	
Relay Type	Digital 8 Segment LED		Digital 7 Segment LED		Digital 4 Segment LED		Digital Graphical LCD	
Protective Functions	3 Phase Overcurrent + HS 3 Level		3 Phase Overcurrent + HS 3 Level		3 Phase Overcurrent + HS 1 Phase Earth Fault + HS		3 Phase Overcurrent + HS 1 Phase Earth Fault + HS, uv lov	
ANSI No's	50/51/50BF		50/51/50n/51n/50BF		50/51/50n/51n		50/51/50n/51n/59/27/81	
Case Size	100	5	100	5	100	5	150	3, 4 or 8
Characteristics	2 Levels of High Set I>> & I>>> Instantaneous and or Definite Time IEC & IEEE Curves Low Set Function I> Definite Time, Normal Inverse Very Inverse, Extremely Inverse A.B.C MI, SI, VI, I & EI 2nd Setting via Digital Input		2 Levels of High Set I>> & I>>> Instantaneous and or Definite Time IEC & IEEE Curves Low Set Function I> Definite Time, Normal Inverse Very Inverse, Extremely Inverse A.B.C MI, SI, VI, I & EI 2nd Setting via Digital Input		High Set Function I>>> IE>>> Instantaneous or Definite Time  Low Set Function I>, IE> Definite Time Normal Inverse Very Inverse Extremely Inverse		High Set Function I>>> IE>>> Instantaneous or Definite Time  Low Set Function I>, IE> Definite Time, Normal Inverse Very Inverse, Extremely Inverse Undervoltage, Overvoltage Under Lower Frequency	
Settings	Definite and Inverse Time I> 0.25 - 4 x IN Step 0.01 t 0.05 - 30s Step 0.01 I>> 0.5 - 40 x IN Step 0.1 I>>> 0.05 - 3s Step 0.01 DT I>>>> 0.5 - 40 x IN Step 0.1 Instantaneous Min Triptime 0.03s  Date & Time Stamping to 10ms Resolution 3 Digital Inputs for Blocking or Switching Settings Patch		Definite and Inverse Time I> 0.25 - 4 x IN Step 0.01 t 0.05 - 30s Step 0.01 I>> 0.5 - 40 x IN Step 0.1 I>>> 0.05 - 3s Step 0.01 DT I>>>> 0.5 - 40 x IN Step 0.1 Instantaneous Min Triptime 0.03s  IE> 0.02 - 4 x IE Step 0.01 Time IE> 0.05 - 30s Step 0.01 IE>> 0.02 - 4 x IE Step 0.01 Time IE>> 0.05 - 3s Step 0.01 Definite Time IE>>> 0.02 - 4 x IE Step 0.02  Time Breaker Fail 0.05 - 0.75s Step 0.01  Time Stamping to 10ms Resolution		Definite Time I> Is 0.2...4 x IN t 0.03...260s  Inverse Time I> Is 0.2...4 x IN t 0.05...10  I>>> I 1...40 x IN t 0.03...2s  Definite Time IE> Is 0.01...2.0 x IN t 0.05...260s  Inverse Time IE> Is 0.01...2.0 x IN t 0.06...10  IE>>> Is 0.01...15 x IN t 0.05...2s		Definite Time I> Is 0.5...2 x IN t 0.1...120s  Inverse Time I> Is 0.5...2 x IN t 0.1...10s  I>>> I 1...2.5 x IN t 0.5...20s  Definite Time IE> Is 0.05...2 x IN t 0.1 - 120s  Inverse Time IE> Is 0.05...2 x IN t 0.1 - 10s  IE>>> Is 0.05 - 25 x IN t 0.1 - 20s  UV 50 - 95%Vn OV 105 - 120% Vn t 0.1 - 60s	
RS485 Serial Port	P&B/Modbus RTU		P&B/Modbus RTU		P&B/Modbus RTU		P&B/Modbus RTU/Profibus	

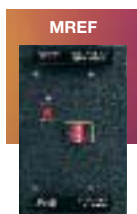
Relay Reference	MRI-ID		MRI-IDS		MRI-ED		MRI-IED	
Relay Type/Display	Digital 4 Segment LED		Digital 4 Segment LED		Digital 4 Segment LED		Digital 4 Segment LED	
Protective Functions	3 Phase Directional Overcurrent		3 Phase Sensitive Directional Overcurrent		1 Phase Directional Earth Fault		3 Phase Directional O/C 1 Phase Directional E/F	
ANSI No's	50/51/67		50/51/67		67n		50/51/67/50n/51n/67n	
Case Size	100	4	100	5	100	3	100	5
Characteristics	High Set Function I>>> Instantaneous or Definite Time  Low Set Function I> Definite Time Normal Inverse Very Inverse Extremely Inverse		High Set Function I>>> Instantaneous or Definite Time  2 Stage Low Set Function I> Definite Time Normal Inverse Very Inverse Extremely Inverse		High Set Function IE>>> Instantaneous or Definite Time  Low Set Function IE> Definite Time Normal Inverse Very Inverse Extremely Inverse		High Set Function I>>>, IE>>> Instantaneous or Definite Time  Low Set Function I>, IE> Definite Time Normal Inverse Very Inverse Extremely Inverse	
Settings	Definite Time I> Is 0.2...4 x IN t 0.3...260s  Inverse Time I> Is 0.2...4 x IN t 0.05...10  I>>> I 1...40 x IN t 0.03...2s RCA = 0...90°		Stage 1 I> Definite Time I> Is 0.05...0.25 x IN t 0.1...260s Stage 2 I> Definite Time I> Is 0.5...2 x IN t 0.1...260s Stage 2 Inverse Time I> Is 0.5...2 x IN t 0.07...20 I>>> I 0.5...16 x IN t 0.1...2s RCA = 0...90°		IE> Is 0.01...2.0 x IN t 0.04...260s Inverse Time IE> Is 0.01...2.0 x IN t 0.06...10  IE>>> Is 0.01...15 x IN t 0.04...2 VE 1 ... 100% Vn COS/SIN ... DT ONLY SOLID/RESISTIVE		Definite Time I> Is 0.2...4 x IN t 0.03...260s Inverse Time I> Is 0.2...4 x IN t 0.05...10  Inverse Time IE> Is 0.01...2.0 x IN t 0.05...10 I>>> I 1...40 x IN t 0.03...2s IE>>> Is 0.01...0.15 x IN t 0.04...2s VE 1 ...100% Vn	
RS485 Serial Port	P&B/Modbus RTU		P&B/Modbus RTU		P&B/Modbus RTU		P&B/Modbus RTU	

For voltage protection relays refer to generator protection selection table



Relay Reference	MRI-E	MSP-EF	MRI-EX	Advanced Feedervision
Relay Type	Digital 4 Segment LED	Switch Set 2 Line LCD	Digital 4 Segment LED	Digital Graphical LCD
Protective Functions	1 Phase Earth Fault	1 Phase Earth Fault	1 Phase Sensitive Directional Earth Fault	Auto Changeover Scheme
ANSI No's	50n/51n	50n/51n	67n	50/51/50n/51n/27/59/25
Case Size	100	100	100	DIN
Output Relays	3	2	3	8
Characteristics	High Set Function IE>> Instantaneous or Definite Time  Low Set Function, IE> Definite Time Normal Inverse Very Inverse Extremely Inverse	High Set Function IE>> Instantaneous or Definite Time  Low Set Function, IE> Definite Time Normal Inverse Very Inverse Extremely Inverse	High Set Function IE>> Instantaneous or Definite Time  Low Set Function, IE> Definite Time	High Set Function  >>, IE>> Instantaneous or Definite Time  Low Set Function  >, IE> Definite Time, Normal Inverse Very Inverse, Extremely Inverse O/V & U/V, Check Synchronising Breaker Fail & TCS
Settings	Definite Time IE> Is 0.01...2.0 x IN t 0.04...260s  Inverse Time IE> Is 0.01...2.0 x IN t 0.06...10  IE>> Is 0.01...15 x IN t 0.04...2s	Definite Time IE> Is 0.05...2.5 x IN t 0.05...2.05s  Inverse Time IE> Is 0.05...2.5 x IN t 0.05...2.0s  IE>> Is 1...35 x IN t 0.05...2.0s	Definite Time IE> Is 0.001...0.02 x IN t 0.04...260s  IE>> 0.001...0.15 x IN t 0.04...2s VE 1...100%VN COS/S IN Earthing	Definite Time  > Is 0.5...2 x IN t 0.1...120s  Inverse Time  > Is 0.5...2 x IN t 0.1...10s   >>   1...2.5 x IN t 0.5...20s  Definite Time IE> Is 0.05...2 x IN t 0.1 - 120s  Inverse Time IE> Is 0.05...2 x IN t 0.1 - 10s  IE>> Is 0.05 - 25 x IN t 0.1 - 20s  UV 50 - 95%Vn OV 105 - 120% Vn t 0.1 - 60s  Sync max angle 2-30° Sync delay 0.5-5s Sync Volt Diff 1-20%
RS485 Serial Port	P&B/Modbus RTU	P&B/Modbus RTU	P&B/Modbus RTU	P&B/Modbus RTU Profibus

Relay Reference	MREF-1/3	MRDT-T2/T3	MIRD-T	MRAR
Relay Type	Switch Set	Digital 2 Line LCD	Switch Set	Digital 4 Seg LED
Protective Functions	High Impedance Differential Current	Biased Transformer Differential	Transformer Differential	Breaker Auto-Reclose Relay
ANSI No's	64R	87T	87T	79
Case Size	100	100	100	100
Output Relays	1	5 or 10	1	5
Characteristics	Instantaneous	2 -Stage Biased Differential	2 -Stage Biased Differential	Inputs  Circuit Breaker Status Trip Protection Start Protection Circuit Breaker Energy Synchronous Check External Block External Reset
Settings	ID 5...82.5% In	Refer to Technical Publication	5...42.5% In	No. of shots 1...4 blocked Fault time t F 0.01...2.0s Dead time t D1 0.1...20s Dead time t D2 0.2...99.9s Dead time t D3 0.2...99.9s Dead time t D4 0.2...99.9s Close time t C1 0.05...2.00s Reclaim Time t R 1.0...300s Maintenance Alarm 1...200 AR Maintenance Lockout 1..200 AR
RS485 Serial Port	No	P&B/Modbus RTU	No	P&B/Modbus RTU



Two of the 486 3.3kV Starter Panels manufactured by Hyundai incorporating P&B Relays for the Great Man-Made River Project in Libya.