Relion®

610 series
Technology summary

Power and productivity
for a better world™

610 series technology summary

Feeder Protection IED	**REF610**
Motor Protection IED	**REM610**
Voltage protection IED	**REU610**

• = included o = optional

Supported functions, codes and symbols

Functionality	IEC 60617	IEC-ANSI	REF610	REM610	REU610
Protection					
Three-phase overcurrent, low-set stage	I>	51	•	-	-
Three-phase overcurrent, high-set stage	I>>	50/51	•	•	-
Three-phase overcurrent, instantaneous stage	I>>>	50	•	-	-
Non-directional earth-fault, low-set stage	I_0>	51N	•	•	-
Non-directional earth-fault, high-set stage	I_0>>	50N/51N	•	-	-
Phase discontinuity	ΔI>	46	•	-	-
Three-phase thermal overload for cables	Θ>	49	•	-	-
Arc protection, two lens sensors for arc detection	Arc	50/50NL	o	-	-
Auto-reclosing	0→1	79	-	-	-
Three-phase thermal overload for motors	Θ>	49M	-	•	-
Motor startup based on thermal stress calculation [1]	I_s^2 x t_s	48/14	-	•	-
Three-phase definite-time overcurrent, low-set stage [1]	I_s>	51/14	-	•	-
Inverse-time unbalance protection based on negative phase sequence current	I_2>	46	-	•	-
Phase reversal protection	REV	46R	-	•	-
Undercurrent (Loss-of load)	I<	37	-	•	-
Cumulative start-up time counter and restart inhibit function	Σtsi	66	-	•	-
Temperature protection using RTD sensors or thermistors	ThA>, ThB>	49/38	-	o	-
Three-phase overvoltage, low-set stage	U>	59P-1	-	-	•
Three -phase overvoltage, high-set stage [2]	U>>	59P-2	-	-	•
Negative phase-sequence overvoltage [2]	U_2>	47	-	-	•
Three-phase undervoltage, low-set stage	U<	27P-1	-	-	•
Three-phase undervoltage, high-set stage [3]	U<<	27P-2	-	-	•
Positive phase-sequence undervoltage [3]	U_1<	27D	-	-	•
Residual overvoltage, low-set stage	U_0>	59N-1	-	-	•
Residual overvoltage, high-set stage	U_0>>	59N-2	-	-	•
Circuit-breaker failure	CBFP	62BF	•	•	•
Lockout relay function		86	•	•	•

1) Mutually exlusive functions
2) Mutually exlusive functions
3) Mutually exlusive functions

Supported functions, codes and symbols					
Functionality	**IEC 60617**	**IEC-ANSI**	**REF610**	**REM610**	**REU610**
Condition monitoring					
Trip circuit supervision	TCS	TCS	•	•	•
Trip lockout function	TRIP LOCKOUT	TRIP LOCKOUT	•	-	•
Restart inhibit function	RESTART INHIBIT	RESTART DISABLE	-	•	-
Trip counters for circuit breaker condition monitoring			•	-	•
Measurement					
Disturbance recorder			•	•	•
Residual current	I_0	I_n	•	•	-
Three-phase current	L_1, L_2, L_3	I_a, I_b, I_c	•	•	-
Phase unbalance	ΔI	$I_{(unbal)}$	•	-	-
Thermal level	Θ	TH LEVEL	•	•	-
Negative phase-sequence current	I_2	I_2	-	•	-
Temperature measurements via RTD inputs	RTD1, RTD2, RTD3, RTD4, RTD5, RTD6	RTD1, RTD2, RTD3, RTD4, RTD5, RTD6	-	•	-
Residual voltage	U_0	U_n	-	-	•
Three-phase voltages (phase-to-phase)	U_{12}, U_{23}, U_{31}	U_{ab}, U_{bc}, U_{ca}	-	-	•
Negative and positive phase-sequence voltage	U_{2s}, U_{1s}	U_2, U_1	-	-	•

Communication				
	Plastic fibre	**Plastic/Glass fibre**	**RS-485**	**RS-485DNP**
Communication protocols				
IEC 61850 [1]	•	•	-	-
IEC 60780-5-103	•	•	•	-
Modbus® (RTU and ASCII)	•	•	•	-
Profibus [1]	-	-	•	-
DNP3 [2]	-	-	•	•
SPA	•	•	•	-
LON [1]	•	•	•	-

1) With interface adapter
2) Not supported in REM610