



Relion®

610 series Technology summary

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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 exclusive functions

² Mutually exclusive functions

³ Mutually exclusive 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	I_1, I_2, I_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

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