

SELECTION GUIDE

Relion® 615 and 620 series

ANSI motor protection

		REM615 Functional Application												REM620 Functional Application		
		Firmware Version 4.0, 4.2							Firmware version 5.0 FP-1					Firmware Version 2.0, 2.1		
Included = •, Optional = ◦	ANSI function	A	B	C	D	E	F	G ⁽⁴⁾	A	B	D	E	A	B	C	
Protection																
Phase overcurrents	51P, 50P	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ground overcurrents	50G	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ground overcurrents	51G	•	•	•	•	•	•	•	•	◦	◦	•	•	•	•	
Directional neutral overcurrent	67N	◦	◦	•	•	•	•	•	◦	•	•	•	•	•	•	
Machine differential Multi—Restrained Differential	87M	◦	•	◦	◦	◦	◦	•	◦	◦	◦	•	◦	•	•	
Machine differential Self—Balancing	87M	◦	◦	◦	◦	◦	◦	•	◦	◦	◦	•			• ⁽³⁾	
Thermal overload	49M	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Loss—of—load	37M	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Phase reversal	46R	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Locked rotor / start	66/51LRS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Locked rotor / jam	51LR	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Negative sequence overcurrents	46M	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Phase undervoltage	27	◦	◦	•	•	•	•	•	◦	•	•	•	•	•	•	
Three—phase directional overpower	32O	◦	◦	◦	◦	• ⁽⁴⁾	• ⁽⁴⁾	•	◦	◦	◦	•	◦	◦	• ⁽³⁾	
Three—phase directional underpower	32U	◦	◦	◦	◦	• ⁽⁴⁾	• ⁽⁴⁾	•	◦	◦	◦	•	◦	◦	• ⁽³⁾	
Volts—per—hertz	24	◦	◦	◦	◦	• ⁽⁴⁾	• ⁽⁴⁾	•	◦	◦	◦	•	◦	◦	• ⁽³⁾	
Remanent undervoltage	27R	◦	◦	◦	◦	• ⁽⁴⁾	• ⁽⁴⁾	•	◦	•	•	•	◦	◦	• ⁽³⁾	
Underexcitation ⁽³⁾	40	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	• ⁽³⁾	
Out of Step ⁽³⁾	78	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	• ⁽³⁾	
Distance backup ⁽³⁾	21P	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	• ⁽³⁾	
Power factor ⁽³⁾	55	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	• ⁽³⁾	
Numerical stabilized low impedance restricted earth—fault ⁽³⁾	87LOZREF	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	• ⁽³⁾	
Positive sequence undervoltage	27PS	◦	◦	•	•	•	•	•	◦	•	•	•	•	•	•	
Phase sequence overvoltage	47	◦	◦	•	•	•	•	•	◦	•	•	•	•	•	•	
Phase overvoltage	59	◦	◦	•	•	•	•	•	◦	◦	◦	•	•	•	•	
Neutral overvoltage	59N	◦	◦	◦	◦	•	•	•	◦	◦	◦	•	•	•	•	
Ground overvoltage	59G	◦	◦	•	•	◦	◦	•	◦	◦	◦	•	◦	•	•	
Frequency	81	◦	◦	•	•	•	•	•	◦	•	•	•	•	•	•	
Resistive thermal devices (RTD)	38	◦	6	◦	2	◦	6	8	◦	◦	◦	◦	12	12	14	
Circuit breaker failure	50BF	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Electrically latched/self—resetting trip digital outputs	86/94	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Arc flash detection via three lens sensors	AFD-1, AFD-2, AFD-3	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Control																
Circuit breaker control	52	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Control for disconnect		◦	◦	◦	◦	◦	◦	◦	•	•	•	•	◦	◦	◦	
Control for earthing switch		◦	◦	◦	◦	◦	◦	◦	•	•	•	•	◦	◦	◦	

REM615 Functional Application													REM620 Functional Application				
Included = •, Optional = ◦	ANSI function	Firmware Version 4.0, 4.2							Firmware version 5.0 FP-1				Firmware Version 2.0, 2.1				
		A	B	C	D	E	F	G ⁽⁴⁾	A	B	D	E	A	B	C		
Control (continued)																	
Emergency restart	62EST	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Synchronism and energizing check	25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	◦ ⁽³⁾	
Number of pages in HMI		1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	
Customizable HMI		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
User programmable LED's		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
User programmable push buttons		—	—	—	—	—	—	—	—	—	—	—	—	—	16	16	16
Monitoring and Supervision																	
Trip circuit monitoring	TCM	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Breaker condition monitoring	52CM	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Fuse failure	60	—	—	•	•	•	•	•	•	—	•	•	•	•	•	•	
Current circuit supervision	CCM	•	—	•	•	•	•	•	•	•	•	•	•	•	•	•	
Machine run timers	OPTM	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Metering																	
Three-phase currents	IA, IB, IC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Sequence currents	I1, I2, I0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Ground current	IG	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Demand phase currents		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Maximum and minimum demand values		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Three-phase voltages	VA, VB, VC	—	—	•	•	•	•	•	•	—	•	•	•	•	•	•	
Sequence voltages	V1, V2, V0	—	—	•	•	•	•	•	•	—	•	•	•	•	•	•	
Ground voltage	VG	—	—	•	•	—	—	•	•	—	—	—	•	—	•	•	
RTD/mA measurement		—	—	—	—	—	—	—	—	•	•	—	—	—	—	—	
Frequency	f	—	—	•	•	•	•	•	•	—	•	•	•	•	•	•	
Power and energy (1-phase, 3-phases) and power factor	P, E and PF	—	—	•	•	•	•	•	•	—	•	•	•	•	•	•	
Automation & Communications																	
Max number of Digital Inputs		18	8	16	12	14	8	12		12	14	8	12		14	12	8
Max number of Digital Outputs		13	10	10	10	13	10	10		10	13	10	10		13	10	10
RTD via RIO600 ⁽⁴⁾		—	—	—	—	—	◦ ⁽⁴⁾	•		•	•	•	•		—	—	—
Max number of High-Speed Outputs (HSO's are optional and take the place of some digital outputs)		3	3	3	3	3	3	3		3	3	3	3		3	3	3
Current and Voltage sensor inputs		—	—	—	—	—	—	—		—	—	•	—		—	—	—
Sample values per IEC 61850-9-2LE		—	—	—	—	—	—	—		—	•	•	•		—	—	—
Front 100Base-TX Ethernet (RJ45) port		•	•	•	•	•	•	•		•	•	•	•		•	•	•
Rear 100Base-TX Ethernet (RJ45) port		•	•	•	•	•	•	•		•	•	•	•		•	•	•
Rear 100Base-FX Ethernet (LC) port		•	•	•	•	•	•	•		•	•	•	•		•	•	•
Rear 100Base-TX Ethernet(RJ45) + RS-485(1x4-wire or 2x2-wire) + IRIG-B ports		•	•	•	•	•	•	•		•	•	•	•		•	•	•
Rear 100Base-FX Ethernet(LC) + RS-485(1x4-wire or 2x2-wire) + IRIG-B ports		•	•	•	•	•	•	•		•	•	•	•		•	•	•
Rear [2 * Ethernet 100FX (LC) + Ethernet 10/100BaseT (RJ45) + serial glass fiber (ST)] w HSR/PRP		—	—	—	—	◦ ⁽⁴⁾	◦ ⁽⁴⁾	•		•	•	•	•		—	—	◦ ⁽³⁾
Rear 100Base-TX and -FX Ethernet (1 * LC, 2 * RJ45) + serial glass fiber (ST) ports w HSR/PRP ⁽⁵⁾		•	•	•	•	•	•	•		•	•	•	•		•	•	•

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		A	B	C	D	E	F	G ⁽⁴⁾	A	B	D	E	A	B	C	
Automation & Communications (continued)																
Rear 100Base-TX Ethernet (3 * RJ45) + serial glass fiber (ST) ports w HSR/PRP ⁽⁵⁾		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Rear [2 * Ethernet 100FX (LC) + Ethernet 10/100BaseT (RJ45)] w HSR/PRP		—	—	—	—	—	—	—	—	•	•	•	•	—	—	—
Rear 100Base-TX Ethernet (3 * RJ45) w HSR/PRP		—	—	—	—	—	—	—	—	•	•	•	•	—	—	—
Ethernet 100Base-TX (RJ45) + configurable RS232/RS485 + [RS485 or serial glass fiber (ST) + IRIG-B] ports ⁽²⁾		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DNP3.0, Modbus, and IEC61850 communication protocols		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Records																
Sequence of events recorder	SER	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Fault recorder	FLR	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Digital fault (waveform) recorder	DFR	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Load profile	LoadProf	—	—	—	—	—	—	—	—	•	•	•	•	•	•	•
Digital Fault Recorder signal channels (Analog/Digital)		4/64	4/64	4/64	4/64	4/64	4/64	4/64	4/64	12/64	12/64	12/64	12/64	12/64	12/64	12/64
Events recorder (FIFO), 1ms resolution		1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024
Fault records		128	128	128	128	128	128	128	128	128	128	128	128	128	128	128

1 REM615 Firmware version 4.2 or REM620 Firmware version 2.1 must be selected

2 May not be combined with Arc Flash Detection (AFD) option

3 REM620 Firmware version 2.1 must be selected

4 REM615 Firmware version 4.2 must be selected

5 HSR/PRP Redundancy option available only for 615 series 4.2 and 5.0 FP1 and 620 series 2.1

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