

Motor Protection – Selector Guide

Features	Device	MM200	MM300	P253	339	P24NM	P24DM	369
APPLICATIONS & FUNCTIONALITY								
LV small size induction motor		•	•	•				
MV small or medium size induction motor					•	•	•	•
MV medium or large size induction motor					•			
MV induction motor via VFD					•			
MV induction motor with cyclic load								•
MV synchronous motor protection								
MV synch. motor protection & excitation ctrl								
Advanced M&D Features								
PROTECTION & CONTROL								
Graphical Display with Bay Control & Monitoring								
Phasor/Harmonic measurement graphical display								
Display of digital/metering status on HMI								
Switchgear Control and Configurable SLD								
Thermal Model (with RTD & unbalance biasing)	49	•	•		•			•
Thermal Model	49			•	x	•	•	
Under/Over speed	12/14							
Custom Overload Curves					x	•	•	•
Voltage Dependant Overload Curves								
Logging Start / Starts-Per-Hour	66		•	•	•	•	•	•
Acceleration Time	48	•	•	•	•	•	•	•
Reduced Voltage Starting	19		•				•	•
Backspin Detection							•	•
Two Speed Motor		•	•		•			•
Reversing (DOLR)		•	•					
Variable frequency drive			•		x			
Emergency Restart				•	•	•	•	•
Mechanical Jam / Stall	50LR	•	•	•	•	•	•	•
Instantaneous Overcurrent - Phase	50P			•	•	•	•	•
Instantaneous Overcurrent - Ground	50G	•	•	•	•			•
Instantaneous Overcurrent - Sensitive Ground/SEF	50SG	•	•	•	•	•	•	•
Instantaneous Overcurrent - Neutral	50N			•		•	•	
Time Overcurrent - Phase	51P			•		•	•	
Time Overcurrent - Ground	51G	•	•	•	•	•	•	
Time Overcurrent - Sensitive Ground	51SG	•	•	•		•	•	
Time Overcurrent - Neutral	51N			•	•	•	•	
Differential	87S							
Current Directional - Phase	67P						•	
Current Directional - Neutral	67N						•	
Current Unbalance	46	•	•	•	•	•	•	•
Undercurrent / Underpower	37	•	•	•	•	•	•	•
Overvoltage - Phase	59P		•		x		•	•
Overvoltage - Neutral	59N						•	
Overvoltage - Auxiliary	59X							
Undervoltage - Phase	27P		•		x		•	•
Undervoltage - Auxiliary	27X	•	•		•			
Negative Sequence Overvoltage	59_2				x		•	
Voltage Transformer Fuse Failure	VTFV/VTS				x		•	
Phase Reversal	47		•		x	•	•	•
Current Transformer Supervision	CTS		•		•		•	•
Overfrequency	81O						•	•
Underfrequency	81U						•	•
Reverse Power	32R						•	•
Power Factor	55							•
Field swappable power supply								
Maintenance/Simulation Mode (test/commission facilities)						•	•	
RTD Overtemperature	49		•		•			•
Remote RTD (RRTD)	49				•			•
Breaker Failure	50BF			•	•	•	•	•
Synchronous motor								
Start Inhibit/Lockout	86	•	•	•	•	•	•	•

Features	Device	MM200	MM300	P253	339	P24NM	P24DM	369
AUTOMATION								
Contact Inputs (max)		7 DC/6 AC	30	6	10	13	13	5
Contact Outputs (max)		3	18	6	7	12	12	4
GOOSE Remote Inputs						64	64	
GOOSE Remote Outputs						64	64	
Analog Inputs (max)								
Analog Outputs (max)								4
RTD Inputs (max)			6		3			12
Thermistor Input		•	•					
Programmable Logic			•	Simple logic	•	•	•	
Setting mode- Simple/Regular								
Trip / Close Coil Supervision				TCS	•	TCS	TCS	
Digital Counters		•	•		•			
Timers			•		•	•	•	
Undervoltage Auto-restart			•				•	
MONITORING & METERING								
Current		•	•	•	•	•	•	•
Voltage			•		x	•	•	•
Frequency			•		x	•	•	•
Power - Real			•		x		•	•
Power - Apparent / Reactive			•		x		•	•
Power Factor			•		x		•	•
Demand - Current, MW, MVA, Mvar							•	•
Energy			•				•	•
Temperature			•		•			•
Environmental monitor (T, H, V, S)								
Event Recorder (number of events)			256	512	512	2048	2048	512
Oscillography / Transient Recorder (samples / cycle)			32	16	32	24	24	16
Data logger / Trend Recording			•		•			•
Motor Learned Information		•	•		•			•
Thermal Capacity Used		•	•		•	•	•	•
Motor Start Data Logger					•			•
Motor Start / Stop Health Report					•			•
Broken Rotor Bar								
COMMUNICATIONS								
Front Port Local Access		•	•	•	•	•	•	•
USB Front port						•	•	
Rear Communications Interface (RS232/RS485)		•	•	•	•	•	•	•
802.11 WiFi								
Radius Authentication								
Ethernet (copper)			•		•	•	•	
Ethernet (fiber)					1	2	2	
Modbus TCP/IP		•	•	•	•			•
DeviceNet protocol		•	•					•
Profibus protocol		•	•					•
DNP 3.0 protocol					•	•	•	
IEC61870-5-103 protocol				•	•	•	•	
IEC61850 protocol					•	•	•	
IEC61850 Ed2 protocol								
IEC61870-5-104 protocol					•			
Peer-to-Peer Communications (GSSE/GOOSE)					•	•	•	
Courier						•	•	
Simple network Timesync protocol			•		•	•	•	
IRIG-B input					•	•	•	
Modbus RTU		•	•		•	•	•	

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Features	Device	469	P241	P242	P243	869	M60
APPLICATIONS & FUNCTIONALITY							
LV small size induction motor					•		
MV small or medium size induction motor		•	•	•	•	•	•
MV medium or large size induction motor		•	•	•	•	•	•
MV induction motor via VFD		•	•				
MV induction motor with cyclic load		•	•				
MV synchronous motor protection		•	•	•	•	•	•
MV synch. motor protection & excitation ctrl		•	•				
Advanced M&D Features			•				
PROTECTION & CONTROL							
Graphical Display with Bay Control & Monitoring			•	•			
Phasor/Harmonic measurement graphical display			•				
Display of digital/metering status on HMI			15				
Switchgear Control and Configurable SLD			•	•			
Thermal Model (with RTD & unbalance biasing)	49	•	•	•	•	•	•
Thermal Model	49						
Under/Over speed	12/14		•				
Custom Overload Curves		•	•	•	•	•	•
Voltage Dependant Overload Curves		•	•	•			
Logging Start / Starts-Per-Hour	66	•	•	•	•	•	•
Acceleration Time	48	•	•	•	•	•	•
Reduced Voltage Starting	19	•	•	•	•	•	•
Backspin Detection			•	•	•	•	•
Two Speed Motor		•	•	•			
Reversing (DOLR)							
Variable frequency drive		•	•				
Emergency Restart		•	•	•	•	•	•
Mechanical Jam / Stall	50LR	•	•	•	•	•	•
Instantaneous Overcurrent - Phase	50P	•	•	•	•	•	•
Instantaneous Overcurrent - Ground	50G	•	•	•			
Instantaneous Overcurrent - Sensitive Ground/SEF	50SG	•	•	•	•	•	•
Instantaneous Overcurrent - Neutral	50N		•	•	•	•	•
Time Overcurrent - Phase	51P		•		•	•	•
Time Overcurrent - Ground	51G		•	•	•	•	•
Time Overcurrent - Sensitive Ground	51SG			•	•	•	•
Time Overcurrent - Neutral	51N		•		•	•	•
Differential	87S	•	•	•			•
Current Directional - Phase	67P		•	•			
Current Directional - Neutral	67N		•	•	•	•	•
Current Unbalance	46	•	•	•	•	•	•
Undercurrent / Underpower	37	•	•	•	•	•	•
Overvoltage - Phase	59P	•	•	•	•	•	•
Overvoltage - Neutral	59N		•	•	•	•	•
Overvoltage - Auxiliary	59X		•	•			
Undervoltage - Phase	27P	•	•	•	•	•	•
Undervoltage - Auxiliary	27X		•	•			
Negative Sequence Overvoltage	59_2		•	•	•	•	•
Voltage Transformer Fuse Failure	VTF/VT	•	•	•	•	•	•
Phase Reversal	47	•	•	•	•	•	•
Current Transformer Supervision	CTS	•	•	•	•	•	•
Overfrequency	81O	•	•	•			
Underfrequency	81U	•	•	•	•	•	•
Reverse Power	32R	•	•	•	•	•	•
Power Factor	55	•	•	•	•	•	•
Field swappable power supply			•				
Maintenance/Simulation Mode (test/commission facilities)			•				
RTD Overtemperature	49	•	•	•	•	•	•
Remote RTD (RRTD)	49			•			
Breaker Failure	50BF	•	•	•	•	•	•
Synchronous motor		•	•	•	•	•	•
Start Inhibit/Lockout	86	•	•	•	•	•	•

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Features	Device	469	P241	P242	P243	869	M60
AUTOMATION							
Contact Inputs (max)		7 (9 w/SPM)	24	150	12	16	16
Contact Outputs (max)		6 (9 w/SPM)	10	90	11	16	16
GOOSE Remote Inputs			8 sets of 64				
GOOSE Remote Outputs			3 sets of 64				
Analog Inputs (max)		4	4	24	4	4	4
Analog Outputs (max)		4	7	4	4	4	4
RTD Inputs (max)		12	12	24	10	10	10
Thermistor Input							
Programmable Logic			•	•	•	•	•
Setting mode- Simple/Regular			•				
Trip / Close Coil Supervision		•	•	•	TCS	TCS	TCS
Digital Counters			•	•			
Timers			•	•	•	•	•
Undervoltage Auto-restart					•	•	•
MONITORING & METERING							
Current		•	•	•	•	•	•
Voltage		•	•	•	•	•	•
Frequency		•	•	•	•	•	•
Power - Real		•	•	•	•	•	•
Power - Apparent / Reactive		•	•	•	•	•	•
Power Factor		•	•	•	•	•	•
Demand - Current, MW, MVA, Mvar		•	•	•	•	•	•
Energy		•	•	•	•	•	•
Temperature		•	•	•	•	•	•
Environmental monitor (T, H, V, S)			•				
Event Recorder (number of events)		256	1024	1024	250	250	250
Oscillography / Transient Recorder (samples / cycle)		12	128	16	24	24	24
Data logger / Trend Recording		•	•	•			
Motor Learned Information		•	•	•			
Thermal Capacity Used		•	•	•	•	•	•
Motor Start Data Logger			•				
Motor Start / Stop Health Report			•				
Broken Rotor Bar		•	•	•			
COMMUNICATIONS							
Front Port Local Access		•	•	•	•	•	•
USB Front port			•				
Rear Communications Interface (RS232/RS485)		•	•	•	•	•	•
802.11 WiFi			•				
Radius Authentication			•	•			
Ethernet (copper)			•	•	•	•	•
Ethernet (fiber)			2	3	2	2	2
Modbus TCP/IP		•	•	•	•	•	•
DeviceNet protocol		•					
Profibus protocol							
DNP 3.0 protocol			•	•			
IEC61870-5-103 protocol			•	•	•	•	•
IEC61850 protocol			•	•	•	•	•
IEC61850 Ed2 protocol			•	•			
IEC61870-5-104 protocol			•	•			
Peer-to-Peer Communications (GSSE/GOOSE)			•	•	•	•	•
Courier					•	•	•
Simple network Timesync protocol			•	•	•	•	•
IRIG-B input			•	•	•	•	•
Modbus RTU							



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