ABB Legacy Motor Control Center Upgrade
UMC100 Universal Motor Controller

Prior versions of ABB MCCs such as the E9000 utilized MM200 and MM300 motor protection relays. The latest MCC product, ReliaGear MCC, has standardized on the ABB UMC100 universal motor controller. This is ABB's latest electronic motor control relay, and this technology can be retrofitted into existing units at customer sites.

ABB's service team can upgrade existing motor control center units, replacing existing MM200[1] and MM300[1] relays with the UMC100.

New Technology: ABB UMC100 – Universal Motor Controller
Intelligent motor management system for single and three-phase motors with Ie = 0.24 - 63 A in a single device. Compact housing with integrated current transformer for cable cross sections up to 25 mm² (max. Ø with insulation 11 mm). Higher currents with additional external current transformer. Thermal overload protection according to EN/IEC 60947-4-1, selectable trip classes 5E, 10E, 20E, 30E, 40E. Some functions require an additional expansion module.

Motor protection functions
• Over-/underload, over-/undercurrent, over-/ undervoltage, rotor blocking, phase failure/ imbalance/sequence
• Earth fault detection integrated or with external sensor CEM11-FBP.0
• Hot motor protection with thermistor or temperature measurement

Motor control functions
• Easily configurable motor control functions: direct, reverse, star-delta starter, pole changing, overload

relay, actuator mode, soft starter mode. Additionally, free programmable application specific logic with function blocks

Service and diagnostic data:
• Operating hours, motor start counter and overload trips, energy, standstill and operation hours supervision, motor status, faults and warnings, fault history (16 events)
• Motor current, phase voltages, thermal load, power factor (cos ⏀), active power, apparent power, energy, total harmonic distortion (THD).

Integrated I/O
• Six digital inputs
• One PTC (thermistor) input
• Four digital outputs.
• Maximum I/O with expansion modules: 14 DI, one PTC input, nine DO, six AI and one AO

Communication
• Standard Profibus interface
• Optional serial and Ethernet networks
• Interface for operator panel UMC100-PAN
• Bus interface for connection of expansion modules

Versions
• 24V DC or 110-240V AC/DC supply
• Available with ATEX approval
• Also available with ATEX plus conformal coating for applications in aggressive atmosphere

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Further UMC100 Documentation: UMC100 Catalog and UMC100 Technical Manual

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[1] The MM200 and MM300 Motor Management Systems are GE Grid Solutions proprietary relays

New Technology for the E9000 Motor Control Center
The standard motor controller in ABB's ReliaGear and MNS MCC product lines is the UMC100. In an E9000 Motor Control Unit, it can replace an MM200 or MM300 motor management relay. If the nominal motor current does not exceed 63A, the UMC100 is capable of monitoring motor current directly. For higher currents, external current transformers can be utilized.

The UMC100 offers greater functionality than the MM200, such as: Voltage inputs, protection functions and programming.

Legacy Technology: MM200[1] and MM300[1] Motor Relays
In prior E9000 MCC applications, both the MM200[1] and MM300[1] were available motor management relays.

An upgrade option is now offered to replace these relays with the ABB UMC100 Universal Motor Controller.

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E9000 Application Guide

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Product Comparison

Category	Feature	MM200[1]	MM300[1]	UMC100
Status	Current product offering?	Yes	Yes	Yes
Power Source	24 VDC & 120/240 VAC	Yes	Yes	Yes
	Digital inputs and outputs	Yes	Yes	Yes
	Temperature monitoring	PTC Only	Optional	PTC + Optional
I/O	General purpose analog inputs and outputs	No	No	Optional
	Phase current inputs (63A)	5A	5A	63A
	Ground current input	Yes	Yes	Optional
Power Monitoring	Phase voltage inputs	No	Optional	Optional
	Motor Thermal Model	Yes	Yes	Yes
	Unbalance (negative sequence) balancing	No	Yes	Yes
	Mechanical jam and acceleration Time	Yes	Yes	Yes
	Ground fault	Yes	Yes	Yes
Software Functions	Total harmonic distortion	No	No	Yes
	Load shedding	No	No	Yes
	Undervoltage (27)	Yes	Yes	Yes
	Undercurrent protection (37)	Yes	Yes	Yes
	Bearing temperature (38)	No	Yes	Yes
	Current unbalance (46)	Yes	Yes	Yes
	Voltage phase reversal	No	Yes	Yes
	Thermal overload (49)	Yes	Yes	Yes
	Ground instantaneous overcurrent (50G)	Yes	Yes	Yes
	Ground time overcurrent (51G)	Yes	Yes	Yes
	Locked / stalled rotor and mechanical jam (51R)	Yes	Yes	Yes
ANSI Device Functions (Numbers)	Over voltage (59)	No	Yes	Yes
	Starts per hour and time between starts (66)	No	Yes	Yes
Automation	Programmable logic and I/O	No	Yes	Yes
Metering & Monitoring	Power and temperature trending	No	Yes	Yes
	Event Recorder	No	Yes	Yes
Serial Protocols	Modbus RTU, Profibus and DeviceNet	Yes	Yes	Yes
Ethernet Protocols	Modbus TCP/IP	No	Yes	Yes
	Profinet IO and Ethernet/IP	No	No	Yes