CASCADIA ⚙ MOTION

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Latest Release:	204F
Release Type:	Minor

Important note regarding hex files:
Hex file with the tag "Group_1" in the filename is used for motor types 0 through 59
Hex file with the tag "Group_2" in the filename is used for most motor types 60 and above.
Hex file with the tag "Group_3" in the filename is used for motor type 195

Important note about RMS GUI. When connected to a Gen 4 controller (e.g. RM100) the GUI will load the correct defsyms file by default. When connected to an older Gen 2 controller (old PM100) the user must manually load the defsyms_YYYYMMDD_G2.txt defsyms file from the File Menu of the Memory Window of the RMS GUI. The RMS GUI will automatically load the correct defsyms files for Gen 3 controllers (e.g. PM150, PM250).

Important note about Gen4 (RM Family) Firmware Programming. When using C2prog select Target: 28235,335 Option: 30MHz

RM/PM (Gen2/Gen3/Gen4) Family Firmware Revision Tracking		
Change Description	**Firmware Revision**	**Date Code**
• Fixed CAN port selection feature default value. • Added motor type 288.	204F	20231107
• Fixed torque limiting function via CAN command.	204E	20231013
• Added iM-225W as motor types 47, 49. • Added regen torque limit check for VSM mode. • Added CAN port selection feature.	204D	20231003
• Added support for fan/pump control using relays 5 and 6	204C	20221118
• Update inductance tables for motor types 73, 243	204B	20221114
• Added support for various motor types	204A	20220617

• Added ability to trigger Diag Data storage over CAN. See CAN protocol manual for more details. • Changed motor type 65 direct id/iq control mode to allow positive id current for testing purposes.	2049	20220325
• Added ability to disable and reenable shudder compensation via CAN Parameter message. See CAN Protocol manual for more details. • Added ability to send a new maximum speed limit over CAN when in torque mode. Any non-zero value sent in the speed command bytes will result in an update maximum speed limit. • Fixed issue with speed limit function when in Valet mode (VSM mode only).	2048	20211209
• Fix issue with negative speed command when regen fade speed EEPROM is non zero. Previous versions will give low or zero current/torque when commanding negative speed while motor speed is zero and regen fade speed EEPROM is non zero.	2047	20210915

• Added support for SS-250-115SOM motor (same as HVH250-115SOM except for different temperature sensor)
    o SS-250-115SOM at 320Vdc nominal is motor type 20 (Group 1)
    o SS-250-115SOM at 650Vdc nominal is motor type 22 (Group 2)
    o Temperature Sensor 1 connects to AIN2 (Motor has a single temperature sensor)
        ▪ Requires 1K pull-up
	2046	20210609

• Added Group 3 • Added new motor HVH146 at 320V nominal as motor type 195. • Removed support for motor types 106 and 126. • Fix issue with BMS Current Limit when operated with high pole count motors. Improve limiting at low speeds.	2045	20210518
• Changed speed mode torque limits to use de-rated torque limits (based on speed, BMS message, motor temperature) instead of always using the maximum torque limits. • Modified CAN Status Message (0xAA default ID) to include a bit indicating if the Start Mode has been activated. • Active discharge voltage monitoring changed to use less filtering to reduce delay in transitioning to completed state. • Removed checking for under-voltage fault when in the active discharge completed state. • Fixed issue when torque command being set to 0 even if Regen Fade Speed = 0 when in VSM mode. • Fixed bug related to initialization of the regen torque limit.	2044	20210505
• Updated Motor Type 73 (HVH410-150DOM) resolver observer natural frequency and Ld/Lq and Id/Iq tables. • Fixed issue with Maximum speed limiter when the Maximum speed is set to a low value (typically less than 1000 rpm).	2043	20210218

• Add Motor type 224, Phi-Power PH382.5.3.1 with 1X resolver. • Add capability to send a fast CAN message (at 3ms rate). Message is sent at offset of CAN ID Offset plus 16 when the CAN Active Hi Word is set to 0xFFFE (low bit is 0). Message contains Torque feedback, Torque Command, Motor Speed, and DC Bus voltage. • Add transmission of status of maximum speed limiting and low speed current limiting to the CAN status message at CAN ID Offset plus 10.	2042	20201123
• Fix issue with speed limiting when operating in CAN mode. Speed limiting now occurs in the fast control loop.	2041	20201028
• Add Motor type 220, Parker GVM210-150S6 with KTY84 Temperature sensor.	2040	20201019
• Add Motor type 219, Phi-Power PH301.6 with 1X resolver.	2039	20201014
• Fix bug with calculation of Saturation Slope when using motor type 65.	2038	20200921
• Correct issue with torque feedback when using phase advance feature.	2037	20200916
• Allow resolver fault to be disabled by setting resolver fault count in EEPROM to zero, for RM inverters and GEN 5 inverters that use rdc chip. This feature was already available for non rdc chip inverters.	2036	20200831
• Added Motor Type 215, Parker GVM210-200J6 with 3X resolver and Omega 44008 temperature sensor.	2035	20200819
• Added Ld/Lq table information for motor type 73, HVH410-150DOM.	2034	20200730
• Added Motor Type 212, Parker GVM210-100F6	2033	20200710
• Added Motor Type 209, Remy HVH410-075-SOM	2032	20200706
• Modification to low speed current limiting feature that decreases the time allowed at high current and low speed. • Reduction in low speed current for RM300DZ.	2031	20200609
• Added support for special hardware version 23471/71.	2030	20200605
• Added Motor Type 205, Parker GVM210-300T6.	2029	20200528
• Added new motor temperature sensor configuration for use with BorgWarner eDM motor (motor type 48 and 57), now motor requires two sensors, connected to AIN2 and AIN4. Reported temperature is the highest temperature. • Added new motor temperature sensor custom configuration, type 27. Selects two of type 25, connected to AIN2 and AIN4.	2028	20200423
• Added new temperature sensor type, NTC Thermistor 10K at 25°C B25/85 = 3986K	2027	20200401
• Added Motor Type 198, Emrax 188 High Voltage (5X).	2026	20200326

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• Added features to allow broadcast rates of CAN messages to be changed. See CAN Manual version 5.1 ○ New EEPROM parameters added for the Fast and Slow rates • Fixed issue with Voltage Feedback Speed giving random values when the motor is stopped. • Added motor types 48 and 57 to support BorgWarner eDM product. • Added special option for allowing sin/cos encoder use with motors other than Yasa motors. • Added new motor temperature sensor type (Semitic 176 ohm NTC thermistor) • Bug fix on setting of Full and Zero Torque temperatures using the GUI. • Bug fix related to display of speed and torque modes in GUI command. • Corrected scaling issue with certain motor temperature sensors.	2025	20200318
• Added motor type 194, PH381.3.3.1 with 1X resolver • Updated support for Yasa motor types (Motor type 7,8, 37, and 45) on RM100-SP and RM300-SP.	2024	20200115
• Updated motor type 89, Parker GVM210-150J6 with a higher maximum torque limit.	2023	20191212
• Added motor type 188, Parker GVM210-400V6 with 3X resolver and Omega 44008 temperature sensor.	2022	20191114
• Fix issue with Motor type 185, Phi-Power PH381.4 with 1X resolver. Changed resolver excitation level	2021	20191031
• Added motor type 185, Phi-Power PH381.4 with 1X resolver	2020	20190904
• Added motor type 182, Parker GVM210-200H6 with 3X resolver and Omega 44008 temperature sensor. • Added motor type 183, Phi-Power PHI301.5 • Added motor type 184, Phi-Power PH381.4 with 3X resolver.	2019	20190823
• Added feature to allow the status of the Program Enable input to be seen in the RMS GUI. • Fixed a bug related to saturation gain EEPROM parameter used with custom PM motors. • Fixed issue with slave mode command being continuously sent set the ID to 0 to disable slave mode command. • Added the ability to have the slave mode direction command be the opposite of the master. • Bug fix related to using active discharge feature in CAN mode. • Added initialization of Phase Advance feature used with custom PM motors.	2018	20190328
• Add motor type 173, Parker GVM210-300P6 with 3X resolver and Omega 44008 temperature sensor.	2017	20181220
• Add motor type 167, Phi-Power PHI.301.5.3.1. • Add motor type 165, Parker GVM210-150S6 3X resolver with Omega 44008 temperature sensor. • Fixed low pass filter used for filtering motor temperature and RTD's. The old filters had some steady state error under certain conditions.	2016	20181105

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• Add motor type 160, Parker GVM142-125S6 with 3X resolver and KTY84 temperature sensor. • Add motor type 161, Parker GVM142-050K6 with 3X resolver and KTY84 temperature sensor.	2015	20180911
• A number of updates to merge state of 19B9 code into 2014. • Added new filter for module, PCB and GDB temperatures. • Module, PCB, and GDB temperatures transmitted via CAN and GUI are now the filtered values. • Added Slave mode, OBD2, and BMS support. Same as in 19B9. • Added Saturation effect feature for custom motor type 65. • Added Phase Advance effect feature for custom motor type 65. • Added support for motor types 153, 154, 155, 157, 158, 159. • Added temperature sensor type 21 for custom motor type 65.	2014	20180826
• Fix bug that that resets the processor if a desaturation fault or hardware over-current fault is present at power on.	2013	20180726
• Fixed RM300DX and RM300DZ max available current. • Fixed RM300DX and RM300DZ DC current sensor gain.	2012	20180620
• Added support for RM300DX. • Fixed current sensor direction issue with RM300DZ. • Changed monitoring of RM300 module temperatures to read all 3 sensor for each phase and report the highest of the 3. • Fixed motor setup issue with motor type 139. • Added support for motor type 117, Emrax 208 with 5X resolver. • Adjusted current regulator gains of motor type 82, Emrax 228 MV.	2011	20180522
• Fixed issue with illegal resolver setting on motor type 65. • Added Motor types 23, 148, 146, 149, 150, 151 same as version 19B0. • Removed resolver adc calibration flag from motor type 78. • Changed function of OK light to come on when PWM is enabled instead of at power on. Same function at version 19B0. • Added initial support for RM300DZ. • Fixed issue with speed loop accumulating error when in torque mode. This issue could cause a small torque spike when switching between torque and speed modes. • Updated Remy HVH250-115DOM tables to the latest as used in 19B0 code (support for 700Arms).	2010	20180402
• Add motor type 152, Parker GVM210-150P6 with 3X resolver and KTY84 temperature sensor.	2009	20180320
• Add support for latest hardware version of RM100DX using 700A current sensors.	2008	20171213

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• Add special test mode for RMS use.	2007	20170926
• Correct issue with sign of DC current sensor on RM100 units.	2006	20170919
• Correct issue with analog input voltage scaling on Gen 4 units. • Added GDB temperature sensing to Gen 4 POST and Run Faults.	2005	20170912
• Fixed resolver excitation filter settings for most Remy, and Emrax motors on Gen 4. • Fixed resolver direction on Gen 4.	2004	20170905
• Correct bug in resolver fault detection. Add two new custom motor types (142 and 143).	2003	20170818
• Correct issue with reading of RDC chip.	2002	20170814
• Fixed issue with mapping of certain GUI parameters. • Fixed issue with access to EXC command and RTD Select command from the GUI on RM100.	2001	20170811
• Initial revision. Modified from 19A6 version. • Added support for RM100 Product Family.	2000	20170810