

Firmware Release Notes: Class 5 D-series PROFIBUS

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Moog Animatics Firmware Update Revision History

Release Date	Software Version	Changes	Dependencies
2/9/2024	5.32.4.69	Production Release No change relative to 5.32.4.68, this version due to changes in other firmware types.	<u>EDS files:</u> SM5_070C.GSD
12/7/2023	5.32.4.68	Engineering Build 1. Fixed issue with user program interrupts of certain commands like TMR(8,<time>) when Z(4,8) used to clear event in an interrupt. There was a potential for events to be missed, which has been resolved.	<u>EDS files:</u> SM5_070C.GSD
1/25/2023	5.32.4.67	Changed related to issues in other firmware types not affecting this version of firmware.	<u>EDS files:</u> SM5_070C.GSD
10/25/2022	5.32.4.66	Production Release 1. Fixed regression on follow mode input that was limiting counts per sample to 63 before overflowing. This was a result of adding SRR/SRM commands. Fixed math to avoid overflow. This issue affected version 5.x.4.59 – 5.x.4.65. 2. Fixed problem with position moves and small velocity target and repeated G commands.	<u>EDS files:</u> SM5_070C.GSD



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3/30/2022	5.32.4.65	Engineering Build 1. Enabled RSP3 report command to determine processor variant and revision.	<u>EDS files:</u> SM5_070C.GSD
10/15/2021	5.32.4.64	Engineering Build	<u>EDS files:</u> SM5_070C.GSD
10/1/2021	5.32.4.63	Engineering Build 1. Fixed problem with TRACE stepping and a RETURN command being issued. 2. Changes to Combitronics fault handling mode to avoid false tripping with large numbers of motors.	<u>EDS files:</u> SM5_070C.GSD
4/15/2021	5.32.4.61	Engineering Build 1. n/a	<u>EDS files:</u> SM5_070C.GSD
3/18/2021	5.32.4.60	Engineering Build 1. Improved the handling of certain status bits that had the potential for race conditions. (Though no specific issues are known to be related to this at this time.)	<u>EDS files:</u> SM5_070C.GSD
11/3/2020	5.32.4.59	Engineering Build 1. SG command implemented #GR_3064. 2. EASAT command implemented #GR_3065.	<u>EDS files:</u> SM5_070C.GSD

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		<ol style="list-style-type: none"> 3. Issue with MCW and RAM tables (a recent bug) #IR_3048. (Only affects fw 5.x.4.57 and 5.x.4.58) 4. Additional error checks in Profibus scaling. (some commands were not returning an error if scaling was out of range, not they do.) 5. Issue #IR_3052 the TWAIT could hang and get stuck sometimes when a fault occurs. 6. PMT modulo target in positive direction (PMTN=) or negative direction (PMTN=). Issue #GR_3040 7. Added OSH(9) and O(9) to be able to adjust PMA independent of PA. #GR_3041 Includes also the ability to set just OSH(8) and O(8) to set PC/PA and not set PMA. 8. Fixed overflow issue when setting PMA with very large PML values. #IR_3058 9. Ability to set CTR(1) to any value using O/OSH(11). Also allows CTR(0) to be set to any value using O/OSH(10). #GR_3066 10. TMR(8,x) / RTMR(8) added to provide a cyclic auto-reload timer. Issue #GR_3028. 11. SYSCTL(7,x) options: GR_3004 KI stability/anti-windup. GR_3067 Zero KI at end of move. 12. SYSCTL(8,x) Ability to set PMA modulo counter to work relative to trajectory 1 so that trajectory 2 can be used as offset without confusing where modulo target is going. Issue #GR_3042 13. User program stack underflow/overflow issues that hang, leave 'program running' bit, and fail to report correctly. Also possibility of memory overrun in SWITCH and WAIT commands in that condition. #IR_3059, #IR_3060. 14. Changed where PositionFollow is cleared on restart to avoid drift issues. Issue #IR_3037 15. Cam resume G(9) command was getting stuck in some cases, need to have a bit cleared after use. Issue #IR_3063 	



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		16. Implemented SRM=, SRR=, RSRM, RSRA, RSRR. Source ratio multiplier. #GR_3014	
3/20/2020	5.32.4.58	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. RERRC reset to 0 ("No error") when ZS, Z(2,14), Zs. Issue: #GR_3057 2. RPA attribute (139) added to Profibus. Issue: #GR_3059. 3. Command scaling: SCALEP, SCALEV, SCALEA, which affects commands like VT=, RPA, ADT=, etc. Includes support for PTS. See full list. #GR_3049 4. IR_3042 PRINT statements that are too long will now consistently issue the error: LENGTH_VIOLATION and prevent random execution of the excess of the PRINT command. 	<p>EDS files: SM5_070C.GSD</p>
12/12/2019	5.32.4.57	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. NMT reset 0x82 "reset comms" issued. Issue #IR_3031. 2. CTA command, etc. cam handling of large tables and address miscalculations (leading to watchdog in some cases.) #IR_3025 	<p>EDS files: SM5_070C.GSD</p>
11/21/2019	5.32.4.56	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. IIC improved timing regularity. Issue #IR_3030. 	<p>EDS files: SM5_070C.GSD</p>
10/28/2019	5.32.4.55	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. CADDR= command corrected range check, was allowing large numbers and truncating them. 2. Closed potential loophole in how CLK= command was handled. No known bug reports, but it may have been a problem. 	<p>EDS files: SM5_070C.GSD</p>

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8/21/2019	5.32.4.54	Engineering Build 1. n/a	<u>EDS files:</u> SM5_070C.GSD
7/11/2019	5.32.4.53	Engineering Build 1. I/O code refactored to save space and make code easier to understand. Intent is that most behavior is the same except for a few very obvious glitches that were fixed (listed below.) There is always the chance some small behavior difference might emerge. <ul style="list-style-type: none"> a. EOIDX(6): OS(W,0) does not override EOIDX(6), previous versions had inconsistent results. b. EOIDX(7) in M-series turns off output when EOIDX(7) is called. c. D-series: ROF(D,0) in previous firmware would respond with 0 (but ROF(S,0) ROF(L,0) do not), new firmware only responds to word 1. ROF(D,0) didn't produce any useful result, always 0. d. D-series: ROC(W,0) in previous firmware would respond with 0, new firmware only responds to word 1. ROC(W,0) didn't produce any useful result, always 0. e. D-series: ROC(bit) single-bit format of command wasn't working. f. D-series: EOIDX(6) sets output state even if EISM active, old firmware would ignore this request when EISM active g. D-series: OR(0) command (and similar outputs unrelated to input 6) could trigger a G if input 6 is low. Previous firmware did this (BUG) now firmware does not. - behavior change. 2. Added RFD and FD= commands for Casella. #GR_3020.	<u>EDS files:</u> SM5_070C.GSD



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		<ol style="list-style-type: none"> 3. Modbus/Combitronics read/ write packets / GOSUB R2. #GR_3023. 4. Modbus handling of UART errors (framing and parity if enabled) to reject whole packet. #GR_3026. 	
4/10/2018	5.32.4.51	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. Fixed problem with command ITR(1,1,2,0,IN) generating an error. 2. Various range-checks and error reporting improvements to certain commands: MINV, MFO, MSO, MFL, MFH, ADT, ATS, DTS, KS, KG, RBAUD, CTW, MFA, MFD, MFSLEW, MFSDC 3. Issue with CTW command allowable range of position differences. Redmine issue #1836. 4. removed ability to reset the reserved bit in status word 2, bit 5. 5. Added error generation for odd number of quotes PRINT(AA") 6. RUIA and RUJA report code added to PROFIBUS interface. Redmine issue #1880. 7. Fixed Profibus command code errors not reported. Redmine issue #1876. 8. Profibus VLD access range check issues on response codes 221, 222, 224, 225. array/variable index ranges were overly restrictive (225 was not restrictive enough.) Also added checks for EE allowed range. Redmine issue #1765 9. Added check to prevent hanging parser if Profibus VLD access is interrupted by changing the response code while still busy. 10. RATOF and RHEX commands correction to range check. Redmine issue #1882. 11. Fix range check issue in Profi response 221. Redmine issue #1765 (continued) 12. Step +/- feature added. Software counting only, limited to 8kHz SYSTL(5,x) to activate. #GR_3002 	<p>EDS files: SM5_070C.GSD</p>

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		13. ADT=, AT=, DT= fixed bug where 2147483647 rounds up and overflows. #IR_3008.	
9/28/2018	5.32.4.50	Engineering Build 1. Allows 32kHz PWM in D-series through the SYSCTL command. 2. Improvements to RS485 timing. Added range checks to BAUD and OCHN command on baud rate settings. 3. improvements to Modbus RTU timing. Added COMCTL(10,x) and COMCTL(11,x) to adjust turn-around time. Redmine #1859.	<u>EDS files:</u> SM5_070C.GSD
7/18/2018	5.32.4.49	Engineering Build 1. Added check to UP, UPLOAD, LOAD commands to prevent any access from Modbus encapsulated interface.	<u>EDS files:</u> SM5_070C.GSD
6/13/2018	5.32.4.47	Engineering Build 1. Modbus encapsulation.	<u>EDS files:</u> SM5_070C.GSD
6/7/2018	5.32.4.46	Engineering Build 1. Various improvements in error checking in commands. 2. Modbus problem with exception for write multiple function. Redmine issue #1769. 3. Modbus problem with address range checks, especially on GOSUB object 0x8004. Redmine issue #1772. 4. Fixed: OUT command interacting with EOBK producing wrong I/O output. Redmine issue #1776. 5. PML command limited to > 0.	<u>EDS files:</u>



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		6. Sync consumer timebase clock correction added reset when major difference (lost count) so that a reasonable recovery is possible.	
3/9/2018	5.32.4.43	<p>Engineering Build</p> <ol style="list-style-type: none"> 1. Various commands added additional syntax-checking 2. MC command corrected, was accepting the wrong arguments in () 3. MD command would set operation mode even when argument incorrect and error reported. 4. Fixed problem with EITR and DITR W options not being handled and generating an error. 	<p><u>EDS files:</u> SM5_070C.GSD</p>
1/9/2018	5.32.4.42	<p>Production Release Various bug fixes.</p> <p>Improvements made to encoder index correction for incremental encoders.</p> <p>Added configurable functionality to map internal index mark to output. EOIDX()</p>	<p><u>EDS files:</u> SM5_070C.GSD</p>
8/29/17	5.32.4.36	<p>Various bug fixes.</p> <p>Encoder index correction implemented for incremental internal encoders.</p> <p>Negative applications of MFMUL/MFDIV When MFSDC(x,0) or MFSDC(x,1) no longer toggles direction. (-) indicates the negative direction and (+) indicates the positive direction.</p>	<p><u>EDS files:</u> SM5_070C.GSD</p>
6/23/2016	5.32.4.31	Various bug fixes.	<u>EDS files:</u>

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		<p>Allow MDB while in MDH commutation mode. (Only class 5 D-series supports MDH mode.)</p> <p>Low-resolution external encoder mode support.</p> <p>Added special command SYSCTL(1,x) to control bootup MTB state.</p> <p>Encoder-hall runaway check status bit moved to give its own status bit: status word 6, bit 5.</p> <p>Cam mode start at arbitrary master values.</p> <p>Resume G(9) cam function.</p> <p>Hybrid mode MDH, MDHV= for D-series only.</p> <p>Current limit improvements for D-series motors.</p>	SM5_070C.GSD
	5.32.4.8	<p>Removed restriction of RB and RW to status words locally available over Combitronics.</p> <p>IN command without parenthesis or SP2 is now allowed inside PRINT statements and array locations, i.e. PRINT(IN) and Ra[IN&3].</p>	<p><u>EDS files:</u> SM5_070C.GSD</p>
	5.32.4.7	<p>Repaired loss of G command functionality after switching from MFR to MP modes. Removed potential delay to GOTO command when using PAUSE or WAIT.</p> <p>Set IO fault (Status Word 3, bit 7) if onboard 24V IO fails to initiate on startup.</p> <p>Improved robustness of encoder failure detection.</p>	<p><u>EDS files:</u> deaf070c.gsd</p>



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		<p>Adjusted O= and OSH= functions to not trigger an encoder loss related position error.</p> <p>Added DMX setting COMCTL(4,x) to define the base aw[] array location for DMX.</p> <p>DMX support added on COM1.</p> <p>Improved handling of commands across several statements in IIC.</p>	
	5.32.3.61	<p>Added Bit at Word 3, Bit 10 to show when motor is limiting current.</p> <p>Increased priority to current limiting algorithm.</p>	<p><u>EDS files:</u> deaf070c.gsd</p>
	5.32.3.60	<p>Implemented runaway detection on internal encoder failure.</p> <p>Low voltage fault now only triggers when movement is commanded.</p> <p>Drive ready Word 0 Bit 0 will be low if any faults, or low bus voltage.</p> <p>BRKTRJ mode repaired where G command occasionally ignored.</p> <p>Increased speed of response from X and S stop commands, where there had been a slight delay.</p>	<p><u>EDS files:</u> deaf070c.gsd</p>
3/7/13	5.32.3.45	<p>Returns functionality to position modulo report command RPMA.</p>	<p><u>EDS files:</u> deaf070c.gsd</p>
1/3/2012	5.32.3.44	<p>Improved VL= (velocity limit) for velocity limit fault to allow wider range: 0 to 32767. Note that units are still in RPM.</p> <p>ECS(value) command added. SRC(0) null encoder so SRC updates immediately in all cases. (Traverse Mode, Follow Mode)</p>	<p><u>EDS files:</u> deaf070c.gsd</p>
4/16/2012	5.32.3.41	n/a	<p><u>EDS files:</u></p>



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			deaf070c.gsd