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Firmware Release Notes: Class 6 D– CANopen, Ethernet: EIP/EEC/EPN

Moog Animatics Firmware Update Revision History

Release Date	Software Version	Changes	Dependencies
8/16/2023	6.4.2.61	Production release: 1. Added cam mode support for starting cam at arbitrary place between points. MCW(table#,count,1) 2. Added cam resume function. G(9) command allows cam to pick up where it left off when MFSLEW/MFA, etc ended previously. 3. Support newer board revs with 32 volt full-scale for user input. 4. Increased analog resolution. 5. ROC function error handling improved for I/O that does not support output. 6. Range check on MCW command. 7. Error handling improved for I/O commands that handle the "W" argument like UR(W,0) 8. Various improvements to motion commands.	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v22.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R6.eds
6/5/2023	6.4.2.60	Engineering version: 1. Added SYSCTL(10,x) to select whether Combitronics is handled via Ethernet (EIP only) or CANbus. 2. Added Profinet support for EIDE() and EOFT() (function 1, arguments 88 – 91. EIDE(-1), EIDE(7), EOFT(-1), EOFT(9) respectively.)	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v22.xml

Release Date	Software Version	Changes	Dependencies
		3. Added Ethercat/CANopen support for I/O: object 0x2101 arguments 4, 5, 6 added for config output, enable special, disable special respectively. 4. Added Ethernet/IP support for I/O: Class 0x71, attribute 1 allows value 3 to disable special function on I/O line. 5. Added EtherCAT, CANopen, Modbus GOSUB R2 case -11 to -18 for EIDE(-1), EIDE(7), EOFT(-1), EOFT(9), EOBK(-1), EOBK(9), EIGN(6), EISM(6) 6. Added Virtual I/O feature. 7. Changed PT initial value set to actual position so that a single G command at startup doesn't send the motor with absolute encoder way back to start. (Which would be unexpected motion.) 8. Increased default timeout for EtherCAT to 75 milliseconds. 9. Fixed watchdog issue on bootup when there is serial traffic: exception 0x1a00. 10. Fixed watchdog issue associated with Profinet during automated testing (messages received during reboot.) 11. Fixed issue with commands: CTE/CTA/CTW causing feedback fault with the Posital encoder.	PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R6.eds
11/21/2022	6.4.2.59	Engineering version: 1. Added command support for gearing from a program, including Combitronics support. Commands: IGT=/RIGT, IGM=/RIGM, IGD()	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v21.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R5.eds
11/18/2022	6.4.2.58	Engineering version:	Ethernet/IP (-EIP models):

Release Date	Software Version	Changes	Dependencies
		1. Added CANopen gearing mode. 2. Fixed issue with serial number reporting for EtherCAT 3. CANopen number of buffers increased to avoid overflow with high traffic loads. 4. Various improvements to memory handling, CAN driver, and system timing. 5. Fixed issue with follow mode saturation that was affecting versions: 6.x.2.55 – 6.x.2.57.	LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v21.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R5.eds
10/11/2022	6.4.2.57	Engineering version: 1. Added SYSCTL(1,x) for MTB option on bootup. 2. Added GOSUB "R2" support in Modbus. This allows sending data values and a GOSUB call in a PLC-friendly manner. 3. Changed EtherCAT: Changed objects 1c00, 1c12, and 1c13 to be arrays for better conformance with standards. 4. Fixed problem with reporting RCAN(28) 5. Fixed reporting HM_MTHD:a 6. Fixed issue with Modbus RTU (serial) error handling. 7. Fixed Combitronics Time sync (over CANbus) had incorrect timing. i.e. command: CANCTL(14,x)	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v21.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R5.eds
7/12/2022	6.4.2.56	Production release: 1. Fixed issue with watchdog when heavy Combitronic traffic. 2. Fixed issue with IP address change between DHCP and static address for EIP networks. This allows non-volatile IP address settings to be updated, though it may require a few steps to change setting and reboot for the NetX to take effect. 3. Added ETHCTL(99,x) for command access to EIP reset service.	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v20.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml

Release Date	Software Version	Changes	Dependencies
		4. Fixed issue with serial port close that was not resetting buffer. This was leaving unintended data in buffer that could be a problem especially when transitioning between command and data mode.	CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R4.eds

| 4/20/2022 | 6.4.2.55 | Engineering version:
1. Changed action so that Class 6D high-side current sensor will cause overcurrent fault now. (Status word 0, bit 4.)
2. Added support for Combitronic Distributed Fault handling over CAN. (Various CANCTL/RCAN functions.)
3. Added timer 8: TMR(8,x)
4. Added source ratio multiplier: SRM, SRR, etc.
5. Added position error saturation: EASAT.
6. Added speed governor: SG.
7. Added ETHCTL/RETH 102 and 103 for the purpose of reporting the state of the UDP/TCP encapsulated ethernet serial connection.
8. Added CANCTL(28,x) to support group GS for PTSover CANbus.
9. Added DS2020 support to PTS command
10. Added CANCTL(21,1) to support DS2020 transform override option
11. Added CANCTL(21,2) to support PTS option to use PC
12. Fixed PTS command hanging when trace feature being used
13. Fixed PTS when only one device (no CAN network) PTS would hang
14. Fixed PTS issue with PTST
15. Fixed PTS various issues with timeout, error handling, and better handling of values that were rounding down to 0.
16. Fixed issue with Combitronics functions return error code from remote side rather than just OPERATION_FAILED
17. Fixed issues with CANopen bootup message getting duplicated or garbled
18. Changed command behavior for RERRC so it will reset to 0 (no error) when ZS, Z(2,14), Zs.
19. Added support for CANCTL(14,x) Combitronics time sync | Ethernet/IP (-EIP models):
LFW: FW850_523_4_0_5.nxf (3.4.0.5)
SM6_0_EIP_D16P10_V2R1_7.eds

EtherCAT (-EEC models):
LFW: FW850_524_3_18_0.nxf (4.3.18.0)
SM6_0_EEC_D402P01_6v20.xml

PROFINET (-EPN models):
LFW: FW850_524_5_0_7.nxf (4.5.0.7)
GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml

CANopen (all models):
LFW: N/A built-in
SM6_0_CO_D402P04V1R4.eds |

3/2/2022	6.4.2.54	Engineering version: 1. Fixed issues with CANopen/EtherCAT object 0x2230 for homing. 2. Changed EtherCAT EDS revision to version 6v20. 3. Changed CANopen EDS version to V1R4. 4. Fixed issue with EIDE command where BRKRLS OFF mode and EIDE(-1) was causing drive to not activate. 5. Fixed issue where overcurrent fault (word 0, bit 4) was activating unintentionally. RW(0) bit 4, or RB(0,4)	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v20.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R4.eds

1/26/2022	6.4.2.53	Engineering version: 1. Added DMX support: OCHN(DMX,1,…), COM1 (RS-485) 2. Changed PROFINET identifiers for Class 6D, associated with updated GSD XML file. 3. Added OSH(8) and O(8) to set PC/PA and not set PMA. 4. Added OSH(9) and O(9) to be able to adjust PMA independent of PA. 5. Fixed overflow issue when setting PMA with very large PML values. 6. Added OSH(10) and O(10) to be able to set CTR(0) to any value. 7. Added OSH(11) and O(11) to be able to set CTR(1) to any value. 8. Added modulo target in positive direction (PMTP=) or negative direction (PMTN=). Similar to PMT= and relates to PMA, PML. 9. Added SYSCTL(8,x) for ability to set PMA modulo counter to work relative to trajectory 1 so that trajectory 2 can be used independently as offset. 10. Added commands support for DS2020: FD=, FSAD, RFAUSTS, RFD, RFSAD. 11. Added ENCCTL(12,0) command to reload RPA counter from Posital encoder. 12. Added ANG(32) clears Posital encoder error bits.	Ethernet/IP (-EIP models): LFW: FW850_523_4_0_5.nxf (3.4.0.5) SM6_0_EIP_D16P10_V2R1_7.eds EtherCAT (-EEC models): LFW: FW850_524_3_18_0.nxf (4.3.18.0) SM6_0_EEC_D402P01_6v19.xml PROFINET (-EPN models): LFW: FW850_524_5_0_7.nxf (4.5.0.7) GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20220114.xml CANopen (all models): LFW: N/A built-in SM6_0_CO_D402P04V1R3.eds

| 12/21/2021 | 6.4.2.52 | Engineering version:
1. Fixed issue with extra characters echoed occasionally in command mode (and fixed support for Echo in data mode RS232.)
2. Fixed issue with OCHN command on channel 0 as RS2.
3. Fixed issue with downloading NXF file over serial port (updating Ethernet controller firmware.) | Ethernet/IP (-EIP models):
LFW: FW850_523_4_0_5.nxf (3.4.0.5)
SM6_0_EIP_D16P10_V2R1_7.eds

EtherCAT (-EEC models):
LFW: FW850_524_3_18_0.nxf (4.3.18.0)
SM6_0_EEC_D402P01_6v19.xml

PROFINET (-EPN models):
LFW: FW850_524_5_0_7.nxf (4.5.0.7)
GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20190118.xml

CANopen (all models):
LFW: N/A built-in
SM6_0_CO_D402P04V1R3.eds |

| 12/10/2021 | 6.4.2.51 | Engineering version:
1. Fixed issue in startup position for Posital encoder. Issue was that the initial position RPA could be off by one revolution under certain cases of starting position.
2. Fixed a problem with PROFINET recovery from unplugging Ethernet cable/network.
3. Added support for EIRE Ai(0) RI(0). This is the internal encoder capturing it's single-turn zero-position.
4. Added support for internal encoder's external probe (external signal when EIRI command issued) capture with the Posital encoder. Ai(0), Aj(0), RI(0), RJ(0)
5. Added EIDE(-1) command to support bypassing drive enable input.
6. Fixed MDC current mode commutation math error. (d control loop was sticking.)
7. Fixed SD card error on bootup when no card present (no card slot on Class 6D anyway.) RW(9) bit 2, or RB(9,2)
8. Added support for SYSCTL(7,x) PID config options.
9. Fixed issue with occasional timeouts or lost CAN packets when using Combitronics on motors with EIP network option. (On Class 6D, Combitronics requests will be made to CAN only, not Ethernet.)
10. Fixed watchdog issue with ZS command. (Internal bit handling improved which may also improve other issues unknown at this time.)
11. Fixed issue with SNAME (PROFINET), memory allocation. | Ethernet/IP (-EIP models):
LFW: FW850_523_4_0_5.nxf (3.4.0.5)
SM6_0_EIP_D16P10_V2R1_7.eds

EtherCAT (-EEC models):
LFW: FW850_524_3_18_0.nxf (4.3.18.0)
SM6_0_EEC_D402P01_6v19.xml

PROFINET (-EPN models):
LFW: FW850_524_5_0_7.nxf (4.5.0.7)
GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20190118.xml

CANopen (all models):
LFW: N/A built-in
SM6_0_CO_D402P04V1R3.eds |

| 11/22/2021 | 6.4.2.50 | N/A - Initial release | Ethernet/IP (-EIP models):
LFW: FW850_523_4_0_5.nxf (3.4.0.5)
SM6_0_EIP_D16P10_V2R1_7.eds

EtherCAT (-EEC models):
LFW: FW850_524_3_18_0.nxf (4.3.18.0)
SM6_0_EEC_D402P01_6v19.xml

PROFINET (-EPN models):
LFW: FW850_524_1_0_2.nxf (4.1.0.2)
GSDML-V2.3-MOOG ANIMATICS-SMC6DEV01-20190118.xml

CANopen (all models):
LFW: N/A built-in
SM6_0_CO_D402P04V1R3.eds |