# Coder 5.01-0 Release Notes

## DATE:

October 21, 2009

## BACKGROUND:

Version 5.01-0 is a new release of the Coder/Opsys
WARNING: To use this version GAP/Coder you must use GAP 2.18C or higher.
WARNING: To use this version GAP/Coder you must use SOS 3.4 or higher.

## NEW FEATURES:

The major changes from 5.00 to 5.01 were:

- The **PCM_KNOCK** logic was overhauled to use a specification file
- The J1939 CAN logic was overhauled and replaced with a more complete set of library functions. This enables a full set of diagnostic message blocks ("DMx_MSG") which can be used for on-board diagnostics ("E-OBD") and supports sending long messages using CTS/RTS.
- The **EVENT_MGR** logic was overhauled to support OBD standards and to be more RAM and EE efficient
- Enhanced security in accordance with OBD standards
    - Flash memory is verified in the background continuously
    - The **SECURE** block was added to provide user-configurable Seed-Key download protection
    - Updated SID generator so that it produces a SID file which is not human-readable
- Updated SID schema in Coder, SOS and Toolkit to match new constructs
- Updated Pattern 15 logic in PCMHD and supported misfire detection
- Moved pre-injection and post-injection out to maximum 360 degrees
- Added **AI_UEGO** support for LSU 4.9 (requires MY10 PCMHD hardware version)
- Corrected merge file issues and enhanced the EEPROM save algorithm for #CAL parameters on low volume PCMHD controls

## ISSUES:

The following knowledge base ("PID") issues were addressed in 5.01-0:

| Issue # | Description | Solution |
|---|---|---|
| 2179 | Please add support for the Bosch Uego LSU 4.9 to **AI_UEGO** | LSU 4.9 Implemented |
| 2477 | Redundant **CAN_WRITE** - cyclic write in CANOPEN with redundant can | Fixed by improving code robustness |
| 5191 | MicroNet Backup error in **CAN_P_STAT** expansion chassis | Note added to Block Help for CAN_P_STAT advising setting the rate group fast enough to keep E_TIMEOUT up to date |
| 7051 | Utilize the size indicator in the **CO_SDO** download message. Set it automatically according to the size of the data in the WRITE_x blocks of the repeat group | Implemented |
| 7491, 8593, | AppManager sometimes reports "Running" when the application is in fact unable to run | An additional state was added to AMService and AppManager 2.10 which reports "Inactive" |

| 9271, 14402 | because of a configuration error | for this circumstance |
|---|---|---|
| 7951 | **EVENT_MGR**.OVER_n does not override the message from being packed in the DM1 message | This was corrected with the complete EVENT_MGR rewrite |
| 8593 | see **#7491** above | |
| 8631, 10211 | Error in Block **C_FUNCTION** when there is only one constant input of a given type with a zero value | This is as designed and has been explained in the Block Help for the C_FUNCTION block: Setting the only input to a constant zero value is a way to signal the compiler not to create code for this input |
| 9271 | see **#7491** above | |
| 10211 | see **#8631** above | |
| 11491 | PCMHD **MIL** block: When START_FL is true and then you change to another mode (BLINK_1 or BLINK_2) the block locks the CUR_FLT and TOTAL_FLT outputs where they were | The MIL block behavior has been more clearly explained in the Block Help |
| 11513 | PCMHD **MIL** block: When the START_FL is tuned false the block does not finish flashing the value currently being displayed before stopping. | Code corrected as part of the **EVENT_MGR** code rewrite |
| 11671 | Ladder Logic 2.10 does not work with NetSim | Modified simop.lib to make **LL_VALUES** update across rate groups |
| 12632 | Values from ZMINUS_ blocks with **DATA_LOG_M** are not synchronized with other rate group values | This situation arises because of when the DATA_LOG_M samples the data. It is set up to sample the data at the start of the rate group and before the ZMINUS_ blocks run. We tried sampling after the ZMINUS_ blocks run, but that introduced jitter depending on when the ZMINUS_ blocks executed in the longer rate groups. It was decided that the way it is, is less of an issue. The help for the ZMINUS_ blocks and the DATA_LOG_M blocks has been updated to describe this policy |
| 12651, 14211 | Backup data sometimes inconsistent with primary in MicroNet | The missing values were self-looping blocks (which creates a "state"). The Coder has been changed to detect blocks that are looped to themselves and create a "State" value that is passed to the backup CPU |
| 13197 | **DATA_LOG_M** Tunable Strings in Repeat Groups cause a general protection fault in the coder | This bug has been fixed in the Coder |
| 13262 | Pattern 18/19 Sync variability | Added description and explanation of behavior to **EFI_P_CORE** block in Block Help |
| 13263 | **LATCH_AE** block: Events.log.csv re-created after power cycle | The name of this file was changed to "ae_eventlog.csv" to overcome a one-period per file name limitation in the control's FTP |

| | | implementation |
|---|---|---|
| 13447 | An application with no **Servlink** port does not allow a re-download --add suitable warning | Suitable warning added |
| 13982 | Entering a string value of "\* or "# on a string input such as on the **I_TO_STR** block will cause a general protection fault in the coder | String parsing code in coder has been revamped and this bug has been corrected |
| 13990 | **NV_LOG** block on MicroNet and Atlas platforms: Count is wrong after a restart | Added missing read of the previous value to the start-up code |
| 14015 | **LATCH_AE** block: Events sometimes not written to the log file | This was because of a buffer overrun in the particular (stress test) application. The buffer has been adjusted appropriately to prevent this error |
| 14039, 14169 | After a reset of the CPU, the SIO Port does not function | This only occurred when the BAUD rate was being passed from another block. A problem with initializing the BAUD rate in this situation has been corrected |
| 14075 | When the control has a rate group slip, the SOS server loses its connection and it doesn't come back until you reset the control | This is by design for TCP SOS connections. If SOS were to continue running and reporting values, it might appear that the control was healthy. The Block Help has been updated to explain this behavior as well as how a rate group slip can be detected on a control with only serial communications |
| 14087 | The count output on the **NV_LOG** block in TMR does not update consistently. Sometimes it updates by multiple counts with each trigger, sometimes not. | The code was protected with a one-shot to prevent multiple increments |
| 14088, 14222, 14365 | I have seen this several times where resetting a control by entering and exiting IO Lock will cause a CPU to get stuck in the "stopping" state and not come back without a hard reset of the CPU. | This was caused by sending debug messages to the Debug COM port during the stop process. These messages have been removed |
| 14091 | Remove AI_KNOCK from template | Removed. The functionality of the block has been replaced with **PCM_KNOCK** |
| 14107 | **MODBUS_S** holding register during LNK_ERR | Modified the scaling to divide the default by the scaling in link error |
| 14116 | If I set a TMR CPU to use SNTP but give it an address that is not a valid SNTP server it will hang on boot-up for about 50 minutes | The SNTP code has an extremely long time-out. This has been addressed in the 5418-2918A and 5418-2566F footprints |
| 14140 | Misfire block high speed after boot (divide by 0 in **MATLAB**) | Corrected in code |
| 14154 | DM2 should be logged and not active. I think they are logged regardless of active | Fixed with **EVENT_MGR** changes |
| 14164 | **DIVIDE** block: Please add a description to Block Help to describe what happens when the divisor input is 0 | Block Help updated: if IN_2 is zero the output is set to either +1E34 (if IN_1 is positive) or -1E34 (if IN_1 is negative) |
| | The output of the **LAG** block can become | |

| | | |
|---|---|---|
| 14165 | "Not a number!" when the input is a large negative number like -1e38 | Fixed in coder by not storing NAN values |
| 14169 | See #14039 above | |
| 14171 | MicroNet TMR - cal_all_ft_act process not getting serviced consistently | The priority of the cal_all_ft_act task was increased above the priority of the tNetTask to ensure regular servicing |
| 14175 | Will GAP 2.x or 3.x be supported by V&V? | Most of the testing was performed using GAP 3.0, but representative applications were tested in GAP 2.18C as well. Furthermore, many tests were performed in GAP3 to confirm that it produces equivalent ".cdr" files to GAP 2.18 |
| 14179 | Cannot compile Redundant CAN Application | This was because of using a group of temporary files interleaved by the rate groups --causing unintentional variable sharing in this application. It has been corrected by creating a static array of files (one for each) |
| 14184 | The AI_SYNC block (ECM3) will not schedule on a tooth that has already been scheduled by EFI. Also if AI_SYNC manages to schedule on a tooth, EFI will be prevented from scheduling on that tooth. | Fixed scheduling of AI_SYNC |
| 14195 | Coder 5.00 fails with old Servlink servers. This was particularly observed with Watch Window Professional. | This was a bug introduced in version 5.00 which has been corrected in 5.01. The old "debug-table" interface has been removed from Servlink in 5.01 |
| 14197 | It is possible to code using the VxWorks compiler with the debug option set. I don't think that compiling with that set is tested by V&V so it shouldn't be an option for the customers | The option has been removed in Coder 5.01 |
| 14198 | Occasional MicroNet Plus rate group slips on start-up | System changes were implemented to prevent these rate group slips |
| 14199 | If there are two AI_MPU_ENG blocks in the application but only one defined in the EFI_CORE, a general protection fault in the Coder will result | There was a string compare to null (the undefined one) which has been corrected |
| 14207 | Increase tmp_blk count to 20 files for easYgen | Added capabilities to handle additional files in the Coder |
| 14211 | See #12651 above | |
| 14216 | We need to increase the number of states allowed per rate group in the MicroNet Plus | The Coder has been changed to allow 24192 states per rate group |
| 14222 | See #14088 above | |
| 14225 | AO_RM_DRV current split incorrect at zero demand | Corrected by only using the ACT_COMBO limiter if the NUM_GOOD input field is a constant |
| 14232 | The Atlas II Actuator output can go to Max value if the current demand gets very close to zero and the calibration offset is negative. | Corrected the library to clamp with ActWithDitherCal>0 instead of ActWithDither>0 |

| 14233 | On the **DATA_LOG_M** block the start time is recorded as the stop time | In non-continuous mode (only), the DATA_LOG_M block was incrementing the start time with each collection cycle. This has been corrected |
| 14234 | The **DATA_LOG_M** block saves its files to different directories depending on CONTINUOUS mode | This is by design. Continuous files need to be saved in a RAM directory to prevent overusing flash memory when files are constantly being written. This has been explained in the Block Help |
| 14245 | PCMHD download failed when use PCMHD_LARGE_SCP | Corrected anticipated buffer size |
| 14274 | GAP application is sending some messages to DVP with incorrect length (CanOpen) | The DVP was expecting all messages to be truncated to minimum length. The control code has been adjusted to match this expectation |
| 14283 | **MODBUS_M** link errors on redundant MicroNet Plus | Changed the table so the message contains enough info for the other CPU to set the correct errors |
| 14284 | **MODBUS_M** exception errors on redundant MicroNet Plus | This was caused by confusion in RTU timing. Corrected by adding a floor of 10ms for RTU timing for each baud rate |
| 14300 | **EGD_CON** EGD_C_ field should be mandatory | Made mandatory in the template |
| 14305 | VxWorks 5.5.1 TFFS Corruption | VxWorks True Flash File System patch implemented |
| 14306 | **AO_RM_DVR** does not work as stated in the Block Help | Updated Block Help to accurately describe the behavior of this block |
| 14308 | Add string security for HMI SID Builder | Added missing write security calls to sidbuild.cpp for sidaddstring function in 5.01 |
| 14325 | **LATCH_AE** can cause a general protection fault in the NetSim coder builder | Corrected an indexing bug in coder |
| 14326 | Tunable strings in GAP3 are represented with a tunable symbol followed by a quoted string in the coder file. The coder includes those quotes in the value | Updated coder string reading routine |
| 14329 | **EGD** Broadcast and Multicast functions for producers and consumers are not in NetSim | The EGD block had never been implemented for simulation. The necessary code has been added to 5.01 |
| 14331 | PCMHD Flash Checksum Fault | Fixed in 5.01 by changing the flash checksum to use CRC instead of 2's complement |
| 14342 | **EGD** block: The Exchange ID is limited to a value of 0-255. It should allow a full short value | Changed range in template to 0-16383 |
| 14350 | Change 200 Curve limitation (**CAL_CURVE2**, **CAL_CURVE3**, **A_CURVE2**, **A_CURVE3**) | The limit was changed to 2000 |
| 14359 | Please add a "remove application from autostart" feature to AppManager | Command added to AppManager and AMService on control |

| 14365 | See **#14088** above | |
|---|---|---|
| 14371 | Multiple **EVENT_MGR** block and **HMI_PT** interaction issue | System was changed to handle case correctly |
| 14376 | 2nd **LON_MOD** (LinkNet Module) in Expansion Chassis doesn't communicate | Addressing problem corrected in Coder |
| 14382 | Using pattern 14 with **EDMHD_SPRK**, **IC100_SPRK** or an **IC1100SPRK** block will cause the PCMHD to not start when power is applied | System was changed to handle case correctly |
| 14402 | See **#7491** above | |
| 14411 | GAP3 Field help missing for Repeat Groups | Added missing logic to template building code |
| 14419 | Need more than 20 module files | Increased allowed number to 100 |
| 14441 | **IACT_EM** and **IACT_PCM** don't work in the MicroNet Plus Expansion chassis | Addressing problem corrected in Coder |
| 14452 | Block Help describes the motor resolver sine fault incorrectly | Corrected Block Help |
| 14453 | The **DITHER** block help says D_RATE defines the frequency of the DITHER and should be 1 / 2*D_RATE. The actual frequency is 1/D_RATE | Corrected Block Help |
| 14466, 14471 | Tunable save can cause **FBUS_M** LINK_ERR and/or **Servlink** communication pauses | Changed the function "update_ee()" to time-slice during the EE save process. This allows lower priority tasks to have some time to run and eliminates communication time-out problems |
| 14468 | **SYNCHRO**.GEN-PHASE and BUS_PHASE help is incorrect | Corrected Block Help |
| 14471 | See **#14466** above | |
| 14514 | Please update the block help and the MicroNet Hardware manual to explain that **SIO** will set the channel faults for a short time during a CPU change-over. Please elaborate and/or modify the exact wording as appropriate | Updated Block Help |
| 14599 | **ACT_CTRL** blocks in RTN chassis can lose the calibration on channel #1 | Changed system to save the correct TEMP values for channel #1 in the RTN chassis |

## UNSUPPORTED BLOCKS:

The following is a list of blocks which are available in the Template and GAP Editor, but are not supported in the 5.01-0 release version of the coder (compiler):

- **CAL_ID**
- **CO_IC1100**
- **COIL_CNFG**
- **I_TO_NAN**
- **J1939_TJET**
- **PC104_ATL**

- **RATIO_LIM2**
- **TEMP_HIST**

## NEWLY SUPPORTED BLOCKS:

The following is a list of blocks not supported in the previous coder (5.00-2) which are supported in 5.01-0:

- **PCM_KNOCK**

## PART NUMBERS:

Version 5.01-0
Gap/Coder Part Number: 9927-1748
Master Kit: 9927-1333, 8928-1088, 1796-1068