

IS-NT-AFR

Air Fuel Ratio controller for Lean burn systems with SPI, SPtM, MINT

SW version 2.6.4

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1 General information

1.1 Version information

FW version 2.6.4, includes fixes for prevent loss of communication with ComAp I/O peripheral modules.

1.2 Clarification of Notation

Note: *This type of paragraph calls the reader's attention to a notice or related theme.*

IMPORTANT: This type of paragraph highlights a procedure, adjustment etc., which can cause a damage or improper function of the equipment if not performed correctly and may not be clear at first sight.

Example: This type of paragraph contains information that is used to illustrate how a specific function works.

2 Changes in the version 2.6.4

2.1 New feature

- Extra internal detection and monitoring buss-off statuses for CAN bus, has been implemented

3 Changes in the version 2.6.3

3.1 New feature

- Heartbeat has been changed from 300ms to 200ms

4 Changes in the version 2.6.2

4.1 New feature

- Application loop of the controller was changed from previous 100 ms to 200 ms (300ms heartbeat)
- Behavior of synchronization process, when Sync attempts does not restart the timer, has been changed
 - Sync timeout restart counting down, based on the sync attempts setting, all the time

4.2 Repairs

- "Q(Um) ramp" and "PWRovFQdel" were evaluated with incorrect period, has been fixed
- IV5 and IV5CAN display has incorrect screen after uploading firmware, has been fixed

5 Changes in the version 2.6.1

5.1 Repairs

- CAN buffer was increased to prevent loss of communication with ComAp I/O peripheral modules

6 Changes in the version 2.6.0

6.1 New features

- > Support of IV12T
 - » There are new archives available which supports remote display IntelliVision 12Touch
 - » Other archives supports so far the common displays IntelliVision 5 and IntelliVision 8
- > New conditions of [[[Undefined variable TechnicalTerms.Setpoints]]] related to *MinPowerPTM*
 - » Following [[[Undefined variable TechnicalTerms.Setpoints]]] have his lowest value of the range limited by value of *MinPowerPTM*
 - *Derating 1 pwr*
 - *Derating 2 pwr*
 - *KnockingReduct*
 - » Upper value of the range for *MinPowerPTM* itself is limited by *Derating 1 pwr*
 - » If the *Derating 2 pwr*[[[Undefined variable TechnicalTerms.Value]]] will be under the *MinPowerPTM*, then the Slow stop alarm "*DeratePwrErr*" is issued.

Example: *MinPowerPTM* = 5%, *Derating 1 pwr* = 50%, *Derating 2 pwr* = 40%. In case I will try to increase the *MinPowerPTM* above 50%, this will not be possible because of blocking from *Derating 1 pwr*. Increasing of *MinPowerPTM* above 40% is possible, but then *Stp DeratePwrErr* is issued.
- > Gas Valve Test modification
 - » Binary Input GasVTestOK must be active for minimum 3s when the GasVTest LogBout is activated and GasValveTest timer is counting otherwise the Gas Valve Test is not passed
 - » All other features regarding to Gas Valve Test remains
- > MIC communication loss detection
 - » New Setpoint:
 - Name: *MICComLost*
 - Location: Engine Protect
 - Option: ENABLED/DISABLED
 - » New logical binary output:
 - Name: MICCOMLOST
 - » Detect reception of CAN frame:
 - ActualIgnitionTiming
 - » If the frame mentioned above is received each 2 seconds:
 - LBO "*MICCOMLOST*" = 0
 - Warning Alarm *MICComLost* is deactivated
 - » If none frame is received within 2 seconds:
 - Warning alarm "*MICComLost*" is announced
 - History log "*MICComLost*" is created
 - LBO "*MICCOMLOST*" is set to 1

- VariStep communication loss detection
 - New Setpoint:
 - Name: *VariStpComLost*
 - Location: Engine Protect
 - Option: ENABLED/DISABLED
 - New logical binary output:
 - Name: VARISTPCOMLOST
 - Detect reception of CAN frame:
 - CurrentPosition in % 0
 - If the frame mentioned above is received each 2 seconds:
 - LBO "VARISTPCOMLOST" = 0
 - Warning Alarm *VariStpComLost* is deactivated
 - If none frame is received within 2 seconds:
 - Warning alarm "*VariStpComLost*" is announced
 - History log "*VariStpComLost*" is created
 - LBO "VARISTPCOMLOST" is set to 1

6.2 Repairs

- Fixed functionality of Temp by Power
 - Function mode Process control - T by Power wasn't working when setpoint Overheat prot was set to [[[Undefined variable TechnicalTerms.DISABLED]]].
 - Some VDE functions were not evaluated while T by Power function was active
 - Load Reduction LBI
 - Load Reduction LAI
 - Power over frequency
- MainsProtState pulse filtering
 - During releasing of LBO: MainsProtState the unwanted pulse was accidentally generated
- Controller changes by itself setting of parameter RS485(1)conv. from Enabled to Disabled when power supply is switched off/on.

7 Changes in the version 2.5.0

7.1 New features

- Complete feature for detection of Datalogger HeartBeat, implemented in version 2.4.0, has been removed
- New feature - Data Logger Communication loss has been implemented
 - The feature can be enabled/disabled by Engine protect setpoint LoggerComLost

LoggerComLost

Setpoint group	Engine protect	Related FW	2.6.4
Range [units]	Enabled/Disabled		
Default value	Disabled	Force value Alternative config	NO
Step	-		
Comm object	15752		
Config level	Standard		
Setpoint visibility	Always		
Description			
This setpoint is used to Enable/Disable Data logger communication loss detection.			

- Regular reception of frames Oil Pressure A or Boost Press at least each 2 seconds is verified. If the frames delay more than 2 seconds:
 - Warning alarm "LoggerComLost" is announced
 - History log "LoggerComLost" is created
 - LBO "LoggerComLost" is set to 1
- created MINT archive
- created non VDE archives
- Support of MIC in non VDE and VDE archives
 - added the MIC enable setpoint
- excluded MIC archives
 - the required changes are done in other related archives and MIC archives are not needed anymore

7.2 Repairs

- A confusion of announced alarms **G ph+L neg** and **G ph opposed** has been fixed
- A potential issue with activation of LBO MainsProtState delayed in some cases more than 100ms has been fixed

8 Changes in the version 2.4.0

8.1 New features

- Support for J1939 protocol from MIC ignition added. It includes also possibility to Reset MIC from controller
- Datalogger heartbeat check – There is BIN from Datalogger in ECU values called Heartbeat. This BIN is automatically configured as input to new HBeatChek function. Output from this function is new LBO HBeatError, this LBO is activated when Heartbeat signal from datalogger is not cycling or cycling slowly. If needed Shutdown can be activated based on this signal. Warning is issued automatically when Heartbeat signal from datalogger is not cycling or cycling slowly.

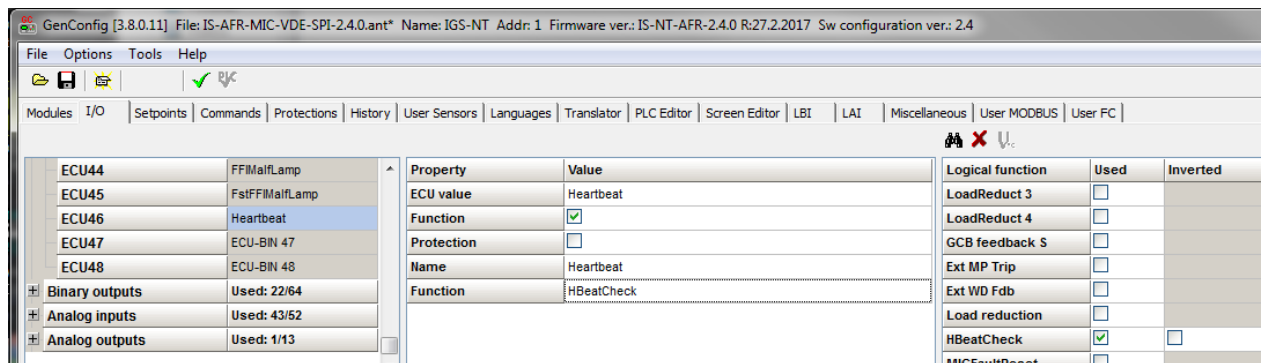


Image 2.1 Heartbeat signal configured to HeartCheck function

- This version includes ECUList Motortech version 1.4.0.10 where support for communication to Datalogger has been added

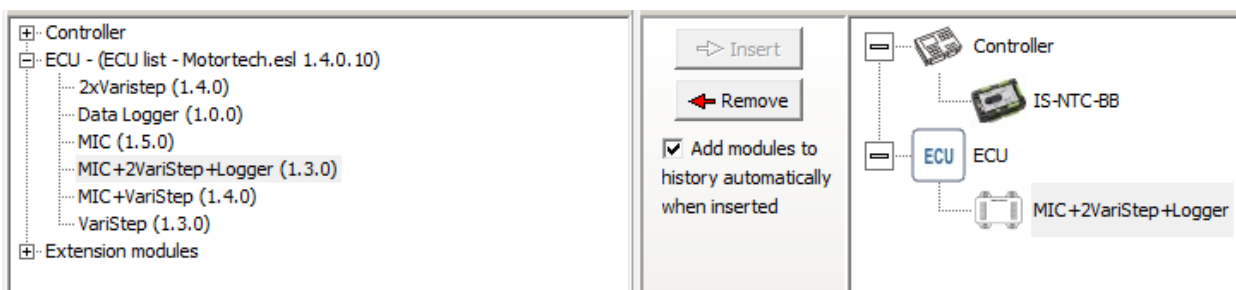


Image 2.2 Datalogger configured in ECU list

9 Related information

9.1 Available files

Firmware (*.mhx)
IS-NT-AFR-2.6.4.mhx

Table 3.1 Available archives

Archives (*.ant)
IS-AFR-Combi-2.6.4.ant
IS-AFR-MINT-2.6.4.ant
IS-AFR-SPI-2.6.4.ant
IS-AFR-SPTM-2.6.4.ant
IS-AFR-VDE-SPI-2.6.4.ant
IS-AFR-VDE-SPTM-2.6.4.ant
IS-AFR-IV12_Combi-2.6.4.ant
IS-AFR-IV12_MINT-2.6.4.ant
IS-AFR-IV12_SPI-2.6.4.ant
IS-AFR-IV12_SPTM-2.6.4.ant
IS-AFR-IV12_VDE-SPI-2.6.4.ant
IS-AFR-IV12_VDE-SPTM-2.6.č.ant

Table 3.2

ECU list
ECU list – Motortech.esl 1.6.0.1

Table 3.3 Available ECU list

10 Notes

10.1 Document history

Revision number	Related sw. version	Date	Author
7	2.6.4	18.01.2022	Louda Jiří
6	2.6.3	20.12.2021	Louda Jiří
5	2.6.2	20.12.2021	Louda Jiří
4	2.6.1	17.2.2021	Daniel Madara
3	2.6.0	13.3.2018	Lubomir Broz
2	2.5.0	4.12.2017	Lubomir Broz
1	2.4.0	17.3.2017	Lubomír Brož