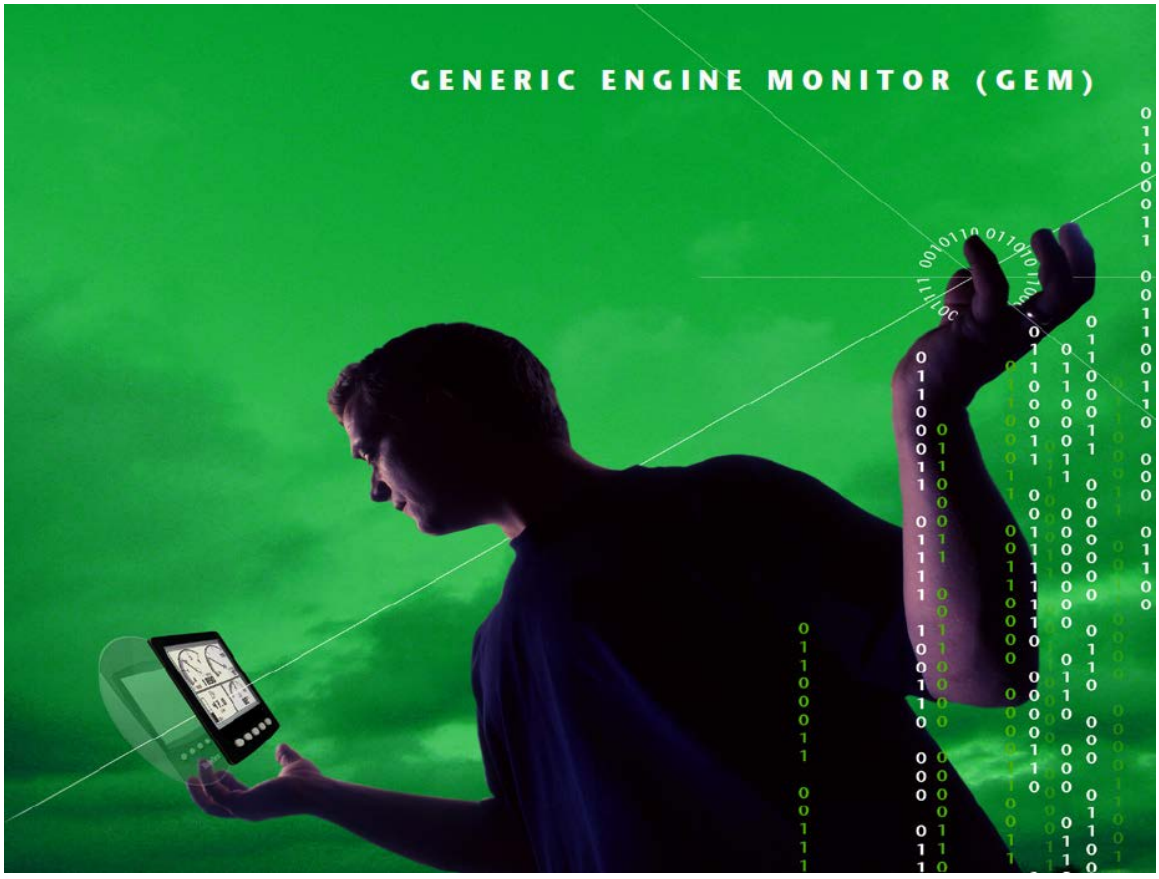
GENERIC ENGINE MONITOR 4



TIER4 UPGRADE

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1. INTRODUCTION

Selective catalytic reduction (**SCR**) is a means of converting nitrogen oxides, also referred to as NO_x with the aid of a catalyst into diatomic nitrogen, N_2, and water, H_2O. A gaseous reductant, typically anhydrous ammonia, aqueous ammonia or urea, is added to a stream of flue or exhaust gas and is absorbed onto a catalyst. Carbon dioxide, CO_2 is a reaction product when urea is used as the reductant.

Beginning with diesel engines manufactured on or after January 1, 2010, the engines are required to meet lowered NOx standards. All of the heavy duty engine (Class 7-8 trucks) manufactures except for Navistar International continuing to manufacture engines after this date have chosen to utilize SCR. This Includes Detroit Diesel (DD13, DD15, and DD16 models), Cummins (ISX line), PACCAR, and Volvo/Mack. These engines require the periodical addition of Diesel Exhaust Fluid (DEF, a urea solution) to enable the process. DEF is available in a bottle from most truck stops, and some have put in bulk DEF dispensers near the Diesel Fuel pumps. Navistar has chosen to utilize Enhanced Exhaust Gas Recirculation (EEGR) to comply with the Environmental Protection Agency (EPA) standards.

New parameters related to SCR are available in J1939. KAntrak can read and display these new parameter as it this gradually required by customer.

2. PARAMETER ADDED

2.1. Soot load percent

SPN 3719 Diesel Particulate Filter 1 Soot Load Percent
Indicates the soot load percent of diesel particulate filter 1. 100% is the level at which active diesel particulate filter regeneration should be triggered.

100% level is the active regeneration trigger level (and if conditions are not favorable for regeneration, soot loading can continue beyond 100%). During normal operation and regeneration a value 0% will indicate a fully regenerated diesel particulate filter. Values of 25%, 50% and 75% will indicate the general level of soot prior to the 100% level where an active regeneration is needed.

Data Length: 1 byte, Resolution: 1 %/bit, 0 offset
Data Range: 0 to 250 % Operational Range: same as data range
Type: Measured

Supporting information: PGN 64891 Icon:  SOOT

2.2. Ash load percent

SPN 3720 Diesel Particulate Filter 1 Ash Load Percent
Indicates the ash load percent of diesel particulate filter 1. 100% is the level at which diesel particulate filter ash service should be performed.

100% level is the target ash service interval (and if ash service is not immediately performed, ash loading can continue beyond 100%).

Data Length: 1 byte, Resolution: 1 %/bit, 0 offset
Data Range: 0 to 250 % Operational Range: same as data range
Type: Measured

Supporting information: PGN 64891 Icon:  ASH

2.3. Catalyst tank level

SPN 1761 Catalyst Tank Level
A special catalyst uses chemical substance to reach legal requirement for NOX emissions. This parameter indicates the level within that catalyst tank.

0 % = Empty 100% = Full

Data Length: 1 byte, Resolution: 0.4 %/bit, 0 offset
Data Range: 0 to 100 % Operational Range: same as data range
Type: Measured

Supporting information: PGN 65110 Icon: 

2.4. Catalyst tank temperature

SPN 3031 Catalyst Tank Temperature
Temperature of the reagent in the storage tank.

Data Length: 1 byte, Resolution: 1 deg C/bit, -40 deg C offset
Data Range: -40 to 210 deg C Operational Range: same as data range
Type: Measured

Supporting information: PGN 65110 Icon: 

2.5. Upstream gas temperature

SPN 3241 Aftertreatment 1 Exhaust Gas Temperature 1
The reading from the exhaust gas temperature sensor located farthest upstream in the aftertreatment system in exhaust bank 1.

Data Length: 2 bytes, Resolution: 0.03125 deg C/bit, -273 deg C offset
Data Range: -273 to 1735 deg C Operational Range: same as data range
Type: Measured

Supporting information: PGN 64948 Icon: 

2.6. Downstream gas temperature

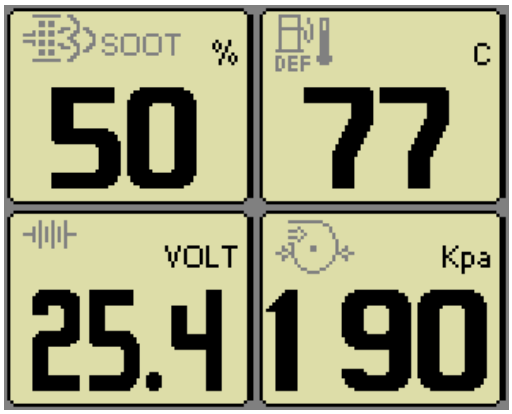
SPN 3245 Aftertreatment 1 Exhaust Gas Temperature 3
The reading from the exhaust gas temperature sensor located farthest downstream in the aftertreatment system in exhaust bank 1.

Data Length: 2 bytes, Resolution: 0.03125 deg C/bit, -273 deg C offset
Data Range: -273 to 1735 deg C Operational Range: same as data range
Type: Measured

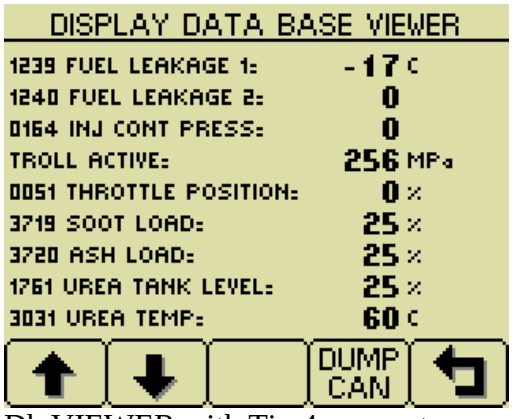
Supporting information: PGN 64947 Icon: 

2.7. New parameter viewing

All new parameters can be view in quad screen or three screen in demo mode, normal mode or Db VIEWER if data are available on the network.



Quadscreen with Tier4 parameter



Db VIEWER with Tier4 parameter

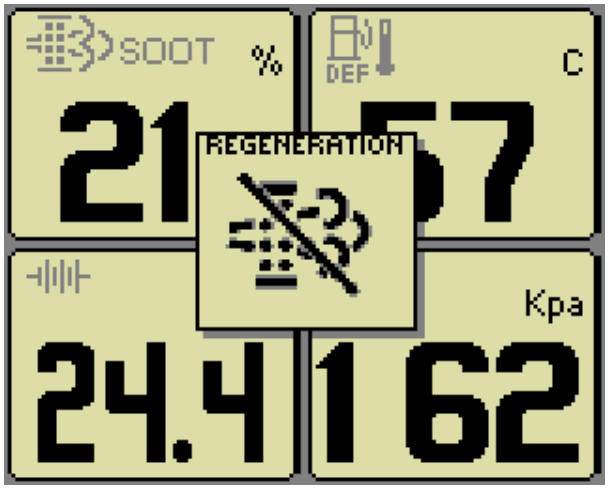
3. STATUS ADDED

3.1. Regeneration inhibited

SPN 3703 Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch
Indicates the state of diesel particulate filter active regeneration inhibition due to the Diesel Particulate Filter Regeneration Inhibit Switch.
00 not inhibited
01 inhibited
10 reserved for SAE assignment
11 not available

This SPN indicates the reason for the diesel particulate filter regeneration not being initiated or being exited prior to completion. When this state becomes active the system will not initiate an active regeneration or will exit an active regeneration. The state provides information that may be provided to the driver/service technician as to why the regeneration did not initiate or was exited.

Data Length: 2 bits, Resolution: 4 states/2 bit, 0 offset
Data Range: 0 to 3 Operational Range: same as data range
Type: Status
Supporting information: PGN 64892

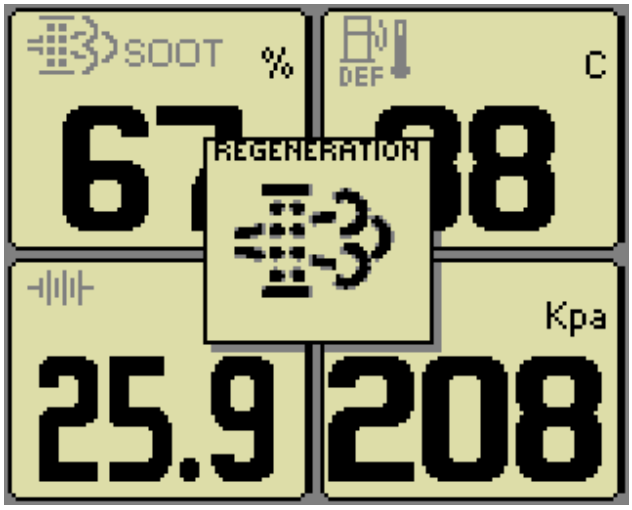


Regeneration inhibit popout

3.2. Regeneration active

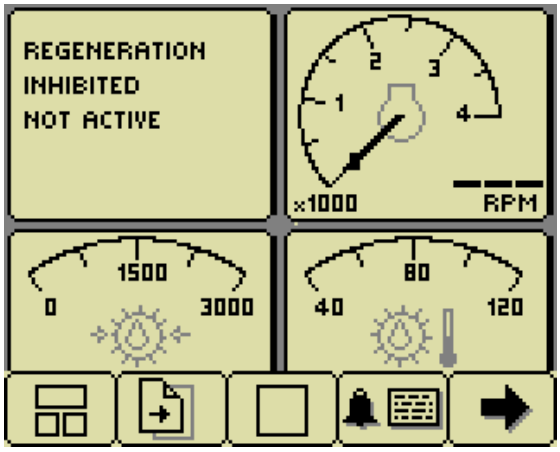
SPN 3700 Diesel Particulate Filter Active Regeneration Status
Indicates the state of diesel particulate filter active regeneration.
00 not active
01 active
10 regeneration needed - automatically initiated active regeneration imminent
11 not available

Data Length: 2 bits, Resolution: 4 states/2 bit, 0 offset
Data Range: 0 to 3 Operational Range: same as data range
Type: Status
Supporting information: PGN 64892



Regeneration active popout

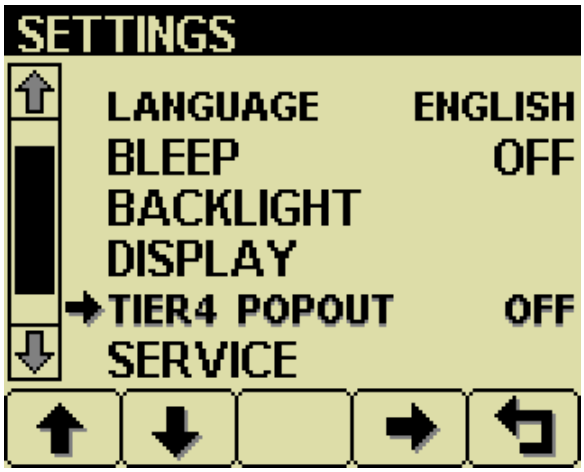
Status can be viewed in quadscreen mode. If status are available on the network, they can be accessed like others parameters, by scrolling trough the list with arrow.



Regeneration status in quadscreen

4. MENU ADDED

In addition, status can generate popout if activated in settings. Regeneration active and Regeneration inhibited will be displayed when status is set accordingly. Errors and DM1 have higher priority than status. Deactivating popout will not remove quadscreen status availability.



Activation of Tier4 status popout in settings

5. GEM IMPROVEMENT

5.1. Improved debouncing

Software driver for the keypad did account for debouncing issue. In 2600 platform, the problem was not apparent but with global timing being different in 2700 platform, this conception weakness becomes apparent.

5.2. Constant backlight

It was a request of some customer to have a constant backlight but 2600 hardware platform had problem of overdriving LED so constant backlight was not possible. It is now fix in 2700 platform.

5.3. J1587 network reset improve

In GEM3 platform, there was an issue with J1587 network. Some global message could reset the unit by memory overflow. This had been fixed for a few customers that used the J1587 network. As J1587 network is an obsolete technology, it become rarely used.

5.4. DM3 acknowledge

In GEM3 platform, there was an issue with J1939/J1587 network. The acknowledge of DM3 request is different from engine to engine. Test made on Cummins engine determine the correct way to read the acknowledge request from the engine

5.5. Russian added

Russian language was never release in GEM. It had been under test at MTW tractor and no negative comments were received so far.

5.6. Alarm enable

This option is used to Enable/Disable DM1 and DM2 alarm. It could be useful in some case to filter all alarm if it is not possible to fix alarm root cause in engine and use it without annoying alarm pop out.