

EasyNO_x – NO_x Monitoring

New Software – Release 2.2.0

The software 2.2.0 is a release for the HMI module EasyNO_x from MOTORTECH.

To update an EasyNO_x, please read the section *Software Update* in the latest version of the operating manual, which can be downloaded at www.motortech.de.

Download

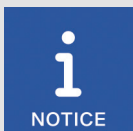
The new EasyNO_x software and the latest operating manual can be downloaded from the MOTORTECH Download Center:

<https://www.motortech.de/download-center/download-center.html>



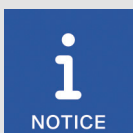
Risk of software damage!

Deactivate the screen saver when updating from software version 1.8.0 or older. Otherwise, this may result in the EasyNO_x no longer displaying the operating manuals properly via the *Help* button.



Update to software version 1.8.0 or higher

Be sure to observe the section *Fixing of Calculation Error* on page 8 when updating from one of the lower software versions to software version 1.8.0 or higher.



Back up data from the device and the NO_x monitor

Before updating the software, back up the activated devices (see in chapter *General Operation* the section *Devices* in the EasyNO_x operating manual) and the EasyNO_x configuration (see section *Display* in the EasyNO_x operating manual).

To back up the logs and the logbook of the NO_x monitor, remove the memory card from the EasyNO_x when it is powered off.

The folders and data on the memory card must remain unchanged.

For each year the NO_x monitor has logs for, a folder with the corresponding year number exists on the memory card. Back up the desired year folders to a PC.

To back up logbooks, back up the desired *Logbook_x* folder (0 = first NO_x monitor, 1 = second NO_x monitor) to a PC.

After the data backup, first insert the memory card into the EasyNO_x before supplying the EasyNO_x with power again. When inserting the memory card, make sure that it is not write-protected by an accidentally flipped write-protect switch.

New Functions and Modifications

Release 2.2.0 – 2025-05-12

NO_x monitor

- New function: In addition to the release via the analog load signal, the manifold pressure, or a binary signal, a specific exhaust gas temperature at the catalyst outlet can be configured for normal operation detection.
- New function: The NO_x monitor now records the averaging time and includes it in the logs and reports.
- Bugfix: In order to determine NO_x failure times, the final daily average determined by the EasyNO_x (24h Average in the *NO_x Monitoring* view) is now used at the end of the operating day and not recalculated from the respective daily averages of the oxygen and nitrogen oxide readings. Fixing of Calculation Error
- Update: In the NO_x monitoring report, the footnote "Last daily value entry" was added to the entries *NO_x Average* and *O₂ Average* in the summary.
- Update: In the *NO_x Sensor* view, the MOTORTECH part number is no longer displayed in the title area.
- Update: The format of the CSV files that are exported via the *NO_x Export* view is now adapted to the set system language. In addition, Windows-1252 is used as character set instead of UTF-8.

MIC3/3+, MIC4, MIC5, MIC6

- New function: The EasyNO_x can now integrate an ignition controller MIC6.
- Bugfix: An error was fixed that in certain cases caused the ignition output status to be displayed with a delay via the corresponding status display in the *Overview*.

DetCon2/16/20

- New function: The *Knocking Intensity* view now displays the knock sensors in use via a green status display.
- Bugfix: An error was fixed that could cause the EasyNO_x to crash when saving a firing order in the *Preferences* view.

General

- New function: The connection status symbol at the bottom right of the menu bar, which shows the connection status of the EasyNO_x with devices at the CAN bus interface CAN1 (CANopen[®]), now also shows the status that no appropriate device has been added to the configuration.
- Update: The addition of device activations is also confirmed by a dialog when pop-ups are deactivated.
- Update: For better readability, the background color of file dialog windows in night mode was optimized.
- Update: The detonation controller information was extended in the configuration and service PDFs.
- Update: Added devices are only displayed as being connected if the device type set in the EasyNO_x matches the device.
- Bugfix: Errors in the update installation program were fixed that caused the software update to abort and obsolete images provided by MOTORTECH not to be deleted from the slide show.
- Bugfix: An error was fixed that could lead to a crash in the *Display Configuration* view if the demo mode was activated while generating the service report.
- Bugfix: An error was fixed that caused the slide show not to work.

Release 2.0.0 – 2023-11-27

NO_x monitor

- Bugfix: An error was fixed that in certain cases led to an infinite loop when publishing the NO_x monitoring report.
- Bugfix: When exporting daily and annual logs as well as the NO_x monitoring report, the date format is now issued according to the language setting in the EasyNO_x.
- Bugfix: If functions of the second NO_x monitor had already been assigned to the outputs of the I/O communication module BPlus before the second NO_x monitor was added, values were only output via these outputs after the HMI module had been restarted.

- Bugfix: Outside of normal operation, high oxygen readings can occasionally occur, which lead to extreme nitrogen oxide readings when converted in accordance with VDMA 6299:2019-09. These could influence the nitrogen oxide daily averages in the NO_x monitoring report and in the annual log, as all valid readings including those outside of normal operation are taken into account in their calculation. In order to limit this influence, excessively high oxygen readings are no longer taken into account when calculating these nitrogen oxide daily averages. The calculation of the failure hours and exceedances of the configured alarm threshold (parameter *Level Limit* in the NO_x monitor) are not affected by this and continue to be correct. The nitrogen oxide daily averages calculated in that context (entry *24h Average* in the *NO_x Monitoring* view) only take into account nitrogen oxide readings in normal operation.
- New function: The value range that is output by the EasyNO_x at an analog output for the currently measured nitrogen oxide reading and the provisional daily average can now be scaled.
- New function: The NO_x monitor now also supports use of relative pressure sensors.

I/O communication module BPlus, I/O module CiA® 401/404

- New function: The EasyNO_x now supports up to three I/O modules supporting device profile CiA® 401 and CiA® 404.
- New function: Analog and binary outputs to which no function has been assigned can now issue values or be switched via the EasyNO_x for test purposes.
- Update: The EasyNO_x now displays in the status views of the analog and binary inputs and outputs which function is assigned to the relevant input or output.

General

- New function: The EasyNO_x has been prepared for the integration of the following MOTORTECH devices:
 - ▷ Ignition controllers MIC100, MIC3, MIC3+, MIC4, and MIC5
 - ▷ Detonation controllers DetCon2, DetCon16, and DetCon20
 - ▷ Temperature module TempScan20
- Update: The EasyNO_x can now integrate up to three generic devices.
- Update: The date format of all trends was adapted to ISO 8601.

Release 1.8.1 – 2023-05-23

NO_x monitor

- Bugfix: An error was fixed in the *NO_x Setup* view that caused the thermocouple layout *Before & After Cat* to always be displayed when the view was opened, regardless of the actual setting.
- Bugfix: An error was fixed that caused the PINs of all access levels to be reset when the software was updated.
- Bugfix: An error was fixed that caused the exhaust gas temperature monitoring to issue too many error messages when measuring values close to the set limits.
- Bugfix: An error was fixed that with activated screen saver in *Power Save* mode caused the screen to remain dark when the *Software Update* view had been opened last.
- Update: In the PDF report, the information texts on data inconsistencies and manipulations detected by the NO_x monitor were optimized.
- Update: The export of logs (1:1 copy, CSV export) is now aborted if the recorded NO_x monitoring data originates from a different HMI module.

General

- Update: In the configuration and service PDFs, the number of the added NO_x monitor is now also listed as part of the configuration parameters.

Release 1.8.0 – 2022-03-28NO_x monitor

- Product safety: The sensing element of the NO_x sensor no longer heats up to the working temperature in demo mode.
- Bugfix: An error was fixed that in certain cases caused the NO_x failure hours not to be displayed in the *Alm* entry in the *Overview* view.
- New function: In the NO_x monitoring report, the operating days and NO_x failure days are now given in the summary. Likewise, the NO_x failure hours as well as the NO_x failure days calculated forwards and backwards are shown in the daily values.
- New function: With the rights of the access level *Master*, functions for finding and correcting errors are available in the *NO_x Export* view via the *More* button. These functions may only be used upon instruction from MOTORTECH or by authorized persons for service purposes and may lead to a loss of the NO_x monitor's data integrity.
- New function: With the rights of the access level *Master*, the *Simulation* entry is available in the *NO_x Setup* view. Changes to this entry can result in personal injury and damage to property and lead to the loss of the NO_x monitor's data integrity. This entry is protected by a security query and may only be changed by authorized persons for service purposes.
- Update: In the NO_x monitoring report, the summed NO_x failure hours are now reconciled. In addition, the raw value of the NO_x failure hours is listed in the *Miscellaneous* section.

Release 1.6.1 – 2021-07-20NO_x monitor

- Bugfix: An error was fixed that in release 1.6.0 caused the NO_x monitor to no longer calculate the daily average correctly.
- Bugfix: An error was fixed that caused the screen to go black if you exited the *NO_x Export* view while a log was being copied or a NO_x monitoring report being created.

Release 1.6.0 – 2021-06-01NO_x monitor

- Bugfix: In the German user interface, the group selection fields in the *NO_x History* view are now available in German.
- Bugfix: An error in the *NO_x Monitoring* view was fixed that caused the measured value display for oxygen *O₂* not to be updated at measured values close to 0 %.
- New function: View *NO_x Sensor* added for displaying status information from the connected NO_x sensor.
- Update: Online help updated.
- Update: The operator data for the NO_x monitoring report can now be specified in the newly added view *Information on Operator*.
- Update: In the *NO_x Setup* view, values up to 2,000 mg/Nm³ are now allowed for the NO_x concentration daily average thresholds *Level Limit* and *Level Warning*.

General

- Bugfix: An error was fixed that in a software update caused the EasyNO_x to stop and become inoperable.
- Bugfix: An error was fixed that caused the PIN Reset Authorization Key (PRRK) display window to freeze upon requesting a reset key for all PINs.

Release 1.4.4 – 2021-02-23NO_x monitor

- Bugfix: An error was fixed that led to a crash in the *NO_x Export* view.

General

- Update: Unit for memory allocation changed in service report (PDF).

Release 1.4.3 – 2021-01-18NO_x monitor

- Bugfix: In the *NO_x Trends* view, the displayed chemical formula and unit of an entry in the legend was corrected.
- New function: The available setting range of the charging pressure threshold now adapts itself to the scaling of the manifold pressure sensor.

I/O communication module BPlus

- Bugfix: If the value range is exceeded, the analog output outputs 20 mA now.

Release 1.4.2 – 2020-12-08NO_x monitor

- Bugfix: Restart from the *Display Configuration* view works properly again.
- Bugfix: In *NO_x Monitoring* view color background of LCD displays in case of faulty signal corrected.
- Bugfix: Detection of continued normal operation when MAP signal is faulty fixed.
- Bugfix: Value gaps in the *NO_x History* view are now displayed correctly.
- Bugfix: All detected errors or manipulations on the NO_x files are now indicated.
- Bugfix: Miscalculation of hours at the turn of the year fixed.
- New function: Country-specific date formats are now used in the *NO_x Export* view.
- New function: The serial numbers of the SD card, the CAN bus modules and the NO_x sensors are now monitored.
- New function: A message box appears if a report is to be generated and no operator data has been specified.
- New function: In the *NO_x Monitoring* view, the color gradient and the end value of the analog NO_x display now adapt to the configured thresholds.
- New function: Predefined filtering of NO_x and O₂ raw values
- New function: Display of O₂ trend in the *NO_x Trends* view
- New function: SD card errors are registered in the logbook.
- Update: The input of the constants *K* and *KNO₂* has been limited to 2 decimal places.
- Update: For better differentiation, the line width in the *NO_x Trends* view was widened.

General

- Bugfix: Software dongles could not be backed up.
- Bugfix: A crash could occur when adding software dongles.

Release 1.4.1 – 2020-08-06NO_x monitor

- Bugfix: Missing translations in the logbook corrected.
- Bugfix: Data compression of the current day in the annual log and in the PDF report removed.
- New function: Saving and loading of NO_x monitor configuration files
- Update: Online help updated.

I/O communication module BPlus

- Bugfix: Analog output scaled. 0 mg/Nm³ to 1,000 mg/Nm³ corresponds to 4–20mA.

Release 1.4.0 – 2020-08-03**Release 1.3.00001 – 2020-08-03**NO_x monitor

- New function: The logbook input dialog now additionally displays the locked entries and allows the user to log in with a higher level when selecting a locked entry.

General

- Bugfix: Some minor errors in function mapping were fixed.

Release 1.3.00000 – 2020-07-27NO_x monitor

- New function: Two new NO_x monitoring modes, *Load via CANopen* and *Start/Stop via CANopen*, available.

General

- Bugfix: SDO heartbeat timeout set from 1 second to 2 seconds.
- New function: Device profile CiA 401 added.
- New function: Device *BPlus* (I/O communication module) added.
- New function: Function mapping of analog and binary inputs and outputs implemented.
- New function: The general error and warning output of the EasyNO_x can now be diverted to devices with CiA-401 profile.

Release 1.2.1 – 2020-07-09NO_x monitor

- Bugfix: Separation of normal operation detection and NO_x averaging
- Bugfix: One hour offset at day change fixed.
- New function: Added minimum temperature monitoring for thermocouples.
- New function: In the *NO_x Thresholds Settings* view, the NO_x monitoring parameters are disabled if no serial number is specified.
- New function: Load signal input on CAN bus module
- New function: MAP values are displayed as trend.
- New function: All NO_x monitor views are automatically exited after a timeout.
- New function: Scaling of MAP sensor implemented.
- New function: Logbook entries filter extended.
- Update: Display of historical values optimized.

General

- New function: EasyNO_x online help added.
- Update: No logging of the *Operator* access level login in the *Events* view
- Update: Main menu button *Recordings* with smaller text

Release 1.2.0 – 2020-06-17**Test Release 1.1.00002 – 2020-06-17**NO_x monitor

- Bugfix: The logbook now checks that an SD card is inserted in the EasyNO_x.
- Bugfix: Several minor bugs were fixed.
- New function: The operator information was added to the report.

General

- Update: Screenshot function integrated.
- Update: User interface style sheet revised.

Test-Release 1.1.00001 – 2020-06-10

NO_x monitor

- New function: The logbook was added.
- New function: The signing of the report was added.
- Update: The report was improved.

Test Release 0.1.00004 – 2020-05-28

NO_x monitor

- Bugfix: An error was fixed that caused the online display of the second NO_x monitor to be displayed inversely.

Test-Release 0.1.00003 – 2020-05-19

NO_x monitor

- New function: Different arrangements of the thermocouples are supported.
- New function: The NO_x monitoring report was added.
- Update: The trend page is now accessed through the *NO_x Monitoring* view.
- Update: The display format of the normal operation hour counter and the failure hour counter was changed.

General

- Update: The configuration and service PDFs now also list the NO_x configuration values.

Test-Release 0.1.00002 – 2020-05-07

NO_x monitor

- Bugfix: An error in the handling of the dew point was fixed.

Test-Release 0.1.00001 – 2020-05-05

NO_x monitor

- New function: The NO_x sensor status was added.

Test-Release 0.0.1 – 2020-04-20

- Initial version

Known Issues

All Versions

- After deleting devices in the device configuration, in certain cases they can only be added back to the device configuration after the EasyNO_x has been restarted.
- The connection status symbol at the bottom right of the menu bar shows disconnections to devices that have not been added.

Fixing of Calculation Error

In software version 1.8.0, the calculation of the annual files was corrected. If you upgrade from a lower software version to software version 1.8.0 or higher, all annual files on the EasyNO_x must be corrected. Proceed as follows:

1. First perform the desired software update on the EasyNO_x.
2. After that, log in to the EasyNO_x with the rights of the access level *Master*.
3. From the *NO_x Main Menu* view, use the *Export* button to open the *NO_x Export* view.
4. Select the year whose annual file you want to correct and tap the *More* button.
5. Delete the respective annual file via the *Delete Annual File* button.
 - ▶ The respective annual file has been deleted.
6. Repeat steps 4 to 5 in order to correct further annual files.
7. Restart the EasyNO_x by tapping the *Reboot* button in the *Display Configuration* view or briefly interrupting the voltage supply to the EasyNO_x.
8. For one time, starting the device software takes longer depending on the number of recorded operating days (approx. 1 minute for every 100 operating days).
 - ▶ The deleted annual files have been successfully recreated with corrected calculations.

Monitoring of Serial Numbers

As of software version 1.4.2, the serial numbers of the NO_x sensor, the CAN bus module and the memory card are being monitored. If you update from software version 1.4.1 or lower to a higher version, you will get entries in the logbook that the serial numbers of these devices have been changed respectively. These messages appear because no serial numbers have been stored before, and therefore they do not need to be observed.

If you replace the NO_x sensor or another device in the EasyNO_x system, we recommend additionally making a manual entry in the logbook for confirmation.