EasyNO$_X$ – NO$_X$-Monitoring

New Software — Release 2.0.0

As of now all EasyNO$_X$ devices are delivered by MOTORTECH with software version 2.0.0.

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 at the following link (approx. 60 MB):

https://www.motortech.biz/downloads/MOTORTECH-SoftwarePackage-EasyNOx-FW-2-0-0.zip
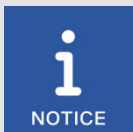
i NOTICE	**Update to software version 1.8.0 or higher** Be sure to observe the section *Fixing of Calculation Error* on page 7 when updating from one of the lower software versions to software version 1.8.0 or higher.
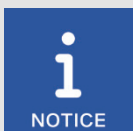
i NOTICE	**Back up data from device and NO$_X$ monitor** Before updating the software, back up the activated devices (see in chapter *General Operation* the section *Devices* in the EasyNO$_X$ operating manual) and the EasyNO$_X$ configuration (see section *Display* in the EasyNO$_X$ operating manual). 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. For backing up the logbooks, back up the desired *Logbook_x* folders (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 2.0.0 – 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 *NOx Monitoring* view) only take into account nitrogen oxide readings in normal operation.

› New function: The value range that is output by the EasyNOx 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 EasyNOx 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 EasyNOx for test purposes.

› Update: The EasyNOx 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 EasyNOx 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 EasyNOx can now integrate up to three generic devices.

› Update: The date format of all trends has been adapted to ISO 8601.

Release 1.8.1 – 2023-05-23

NO_x monitor

› Bugfix: An error was fixed in the *NOx 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 – 2022-03-28

NO_X monitor

〉 Product safety: The sensor 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 – 2021-07-20

NO_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 – 2021-06-01

NO_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 O_2 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/Nm^3 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 – 2021-02-23

NO$_X$ 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 – 2021-01-18

NO$_X$ 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 – 2020-12-08

NO$_X$ 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 O$_2$ raw values
〉 New function: Display of O$_2$ 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 *KNO$_2$* has been limited to 2 decimal places.
〉 Update: For better differentiation, the line width in the *NO$_X$ Trends* view has been widened.

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

Release 1.4.1 – 2020-08-06

NO$_X$ 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: Fixed some minor bugs in the function mapping.

Release 1.3.00000 – 2020-07-27

NO_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 – 2020-07-09

NO_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 fixed.
- ⟩ New function: The operator information has been 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 has been 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 also 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.