# OMRON

NS HMI - Data Logging

The Data Logging feature is a very strong feature of the NS series. You can easily log data of connected devices or just log the internal NS memory. The NS can automatically save the logged data to CSV (Comma Separated Values) files on the Compact Flash card. These files can be read in almost any software program, like MS Excel. Also these files can be transferred to a (network) PC by means of FTP.

The logging component allows the developer to show values that are being logged graphically in a trend. There are many possibilities to show a trend line. You can choose between step (straight lines) and analogue display (flowing lines) Log points can be highlighted with four different marker styles. Of course you can choose between 256 colours for the markers and the trend line, which can have five different styles.

The trend graph comes with integrated Y-axis and a fully configurable time axis that can be configured in any format you need. The trend is also dynamic meaning the users can optionally stop/start/pause the trend themselves, export data to a CF card or read earlier saved data and compare/overlay it with current data in the graph.

In short the logging component contains many features that allow customers not only to log the data, but also to visualize and analyze it, all from the NS terminal.
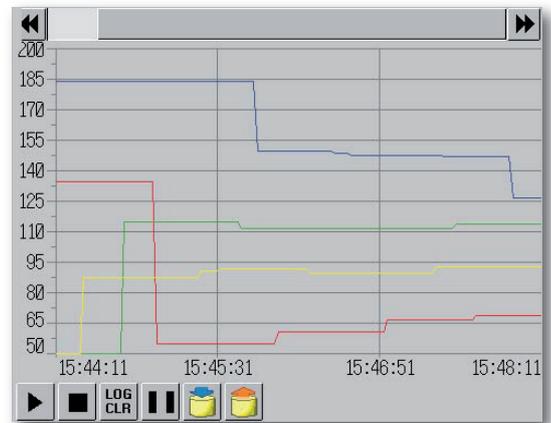
Applications where logging can be used are huge, some examples:

Food: Log temperature values (i.e. for HACCP)
Semi: Log all measured values from a machine such as tools used, number of product made, thickness measurement results and product lotnumbers.
Chemical: Log processes (i.e. store pressure, temp, amount of ingredients used etc.)
Packaging: Tracking & Tracing of lotnrs, production amounts and ID's of operators that worked on the machine.
Water treatment: Measure and display the amount of water processed
Ceramics: Log batches with all needed info (i.e. Oven temperature, number of products, operator name, machine speeds etc.)

Remark: The NS can only log numeral values in .csv files, no alpha numeral values. With Macro command it's possible to log also alpha numeral values but then in binary files (that can be converted on a pc to .csv).

Main functions

• Event or Time Based Logging (i.e. trigger can come from PLC or every x seconds)

• Log Word, Double Word, Real or BCD values

• Show logged data in a trend

• Compare history data from CF with current data in the Trend, showing multiple lines

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Data Logging details

The Logging Configuration is categorized in groups that a user can assign a name to.
Logging Configuration can be made for a maximum of 100 groups. The log timing is minimal 0.5 seconds or can be based on an event. Each group can log a maximum of 999 files to the CF card.
Up to 16 addresses can be set for each group with a total of 50.000 logging points per group.

Logging points are the number of points to be logged. This has to be configured for each group and depends on how many addresses you want to log and how long and quick you log.

The total number of logging points in NS is 160.000 points. (For NS5: 120.000 points).
Constant logging is possible for up to a total of 50.000 points corresponding to 50 addresses.

Calculating logging points

For a fixed period of time that you want to log you can easily calculate the logging points.

Set the number of logging points to be saved in one CSV file. In this example, the logging period is 5 hours (18.000 s) and the sampling cycle is 2 s, so the number of logging points is 18.000 / 2, i.e., 9.000, so 9000 is set as the logging points for this group. In each CSV file you will now have 9000 records.

The available number of "Always logging points" differs depending on the sampling cycle for the data log group and the log address storage type.
Example: The following table shows the maximum number of "Always logging points" that can be registered for one group with **one address to log**.

		Log address storage type	
		1 word	2 words (including REAL)
Log timing	Sampling cycle 1 to 86,400 s or on event	50,000	37,500
	Sampling cycle 0.5 s	37,500	30,000

When registering multiple log addresses, the maximum number of "Always logging points" will be the number shown on the table divided by the number of log addresses.

Calculating when CSV file is saved

You can configure that the NS does a periodically save for Data Logging to the CF card. To know when the log is saved you can use the following formula to calculate when the data is saved to the CSV file:

Logging points x log timing / 60 minutes = every ... minutes CSV file is created.
With the setting „On Sampling Cycle at 0.5 sec. and 3000 log points", NS saves CSV files on CF card every 25 minutes.

See how you calculate how often data log is saved:
3000 pts. x 0.5 (seconds) divided by 60 (minutes): comes to 25 minutes, meaning it takes 25 minutes to accumulate 3000 points..

File size

The manual also has a description of how to calculate the size of the CSV file, so you can calculate the minimum space you need. Remember that NS allows a maximum of 999 CSV files on CF card for each group.

More detailed information can be found in the NS series programming manual (V073-E1-06).