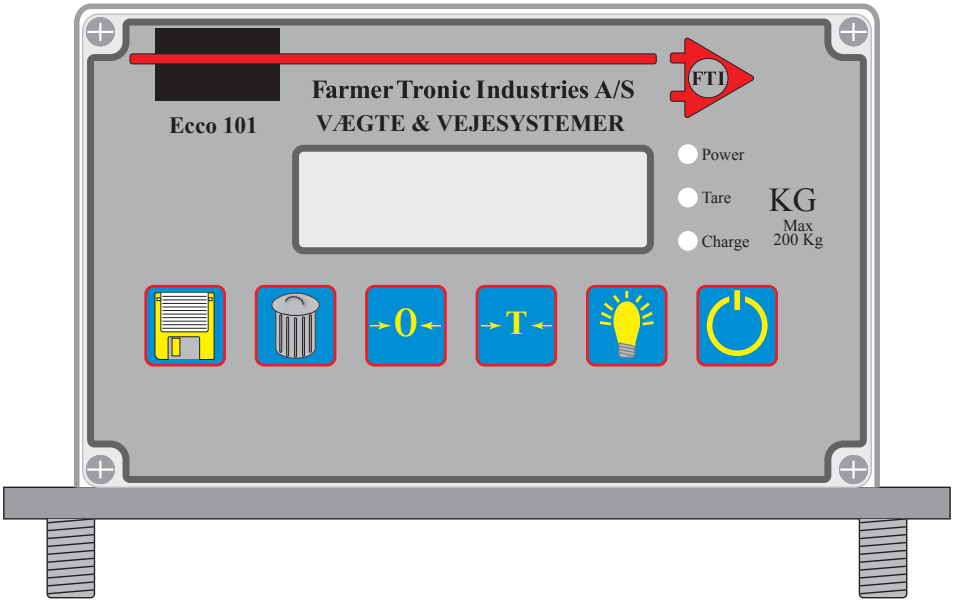
Farmer Tronic Industries A/S



User manual for SW 9.01

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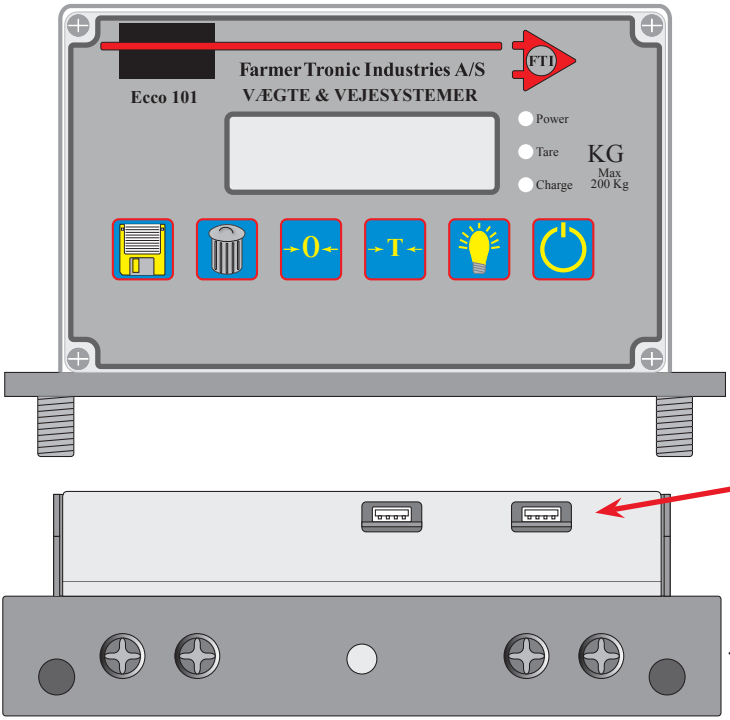
Content

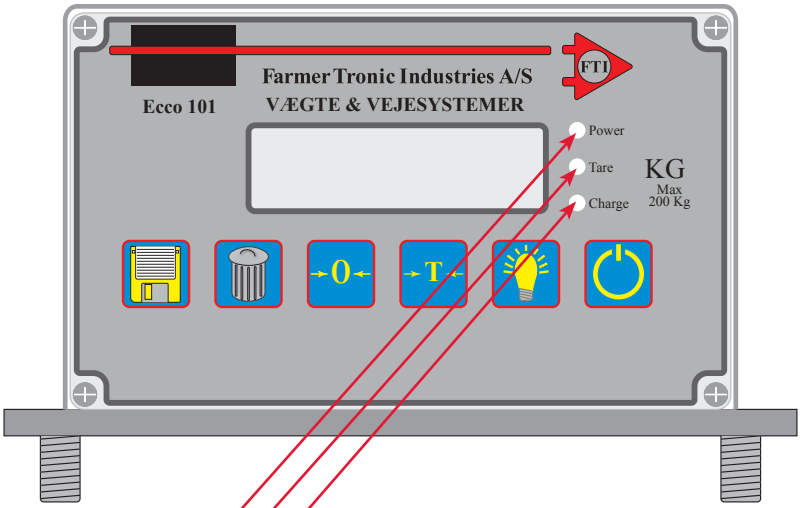
Description-front



Note: Connector for USB stick is the one far right.

Instrument:

5 digit LCD-display with backlight
1 x build in buzzer
3 x LED
6 x KEY
1 x Loadcell connector.
2 USB port (1 x USB-Flash + 1 x wireless keyboard (option))
1 x 230V adaptor + build in battery.
1 x Stainless metal frame (option).

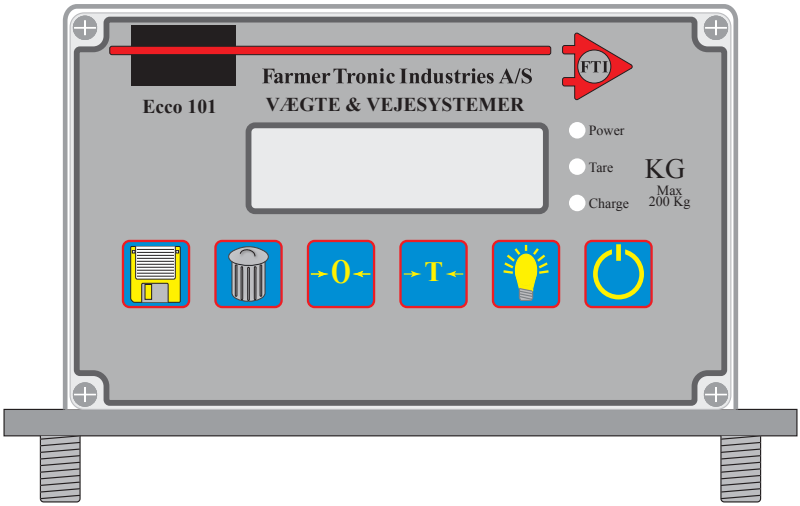


Power LED.
This LED is light when 230V is applied through adaptor.

Tare LED.
Constant light: Instrumenst has been TARED. Net-weight is shown.
Flashes: Weight not stable. Await stable before reading the weight.

Charge LED.
When used without external supply the instrument will discharge the build in battery (battery version). When this LED starts to flash please charge the battery. The use can continue while charging.

Please note - if the battery is completely discharged a prolonged charging periode may be required / battery replaced. The instrument may not be able to be switched on properly as long as the battery-voltage is very low.



ON/OFF : The instrument is turned ON / OFF
(The instrument can be set to show actual time in the display during OFF.)

ON: Turn backlight ON
OFF: Turn backlight OFF

Tare: Press to TARE (Show Net-weight)
Press again to show GROSS weight

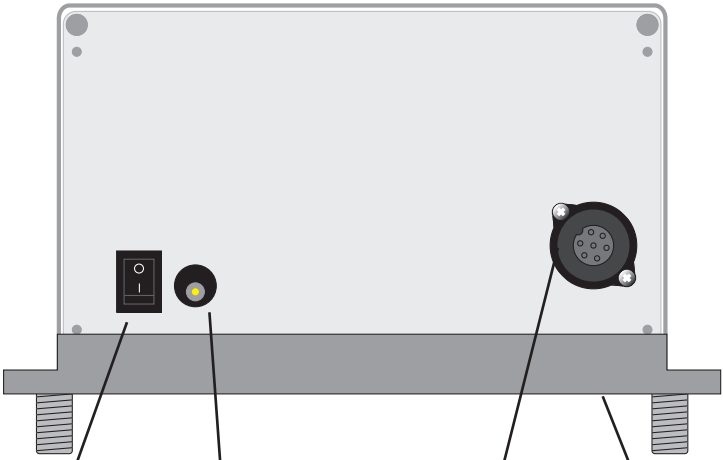
Zero: Press the Zero the Weight.
Please note, that a Zero can not be undone like TARE.

Battery: Press to show the battery-voltage
Press again to go back to weight.

DISK: Start / stop logging of data.
Press once to start logging (OPEn is shown)
Press again to stop logging (CLOS is shown)
note: Text's in display depend on log mode !

Description-back

Note, a battery is build in



ON / OFF switch.
This switch turns off both instrument and battery. Hence battery can not be charged when this switch is OFF.

Connector signal

Pin	
1:	+ Excitation
2:	+ Signal
3:	- Signal
4:	- Excitation
5:	Screen

Option.

A optional stainless steel frame can be mounted.

Connector for Charger:
USE ONLY the original charger - 9 V, 800 mA

The charger *may* be left connected at all times. A build in circuit controls the charging of the battery and switches on/off charging automatically.

How to use

♦ *230 V version - connect instrument to 230V via 9V adaptor.*

♦ Insert the USB-stick in the rightmost USB-connector.

♦ NOTE: If the USB-stick isn't present the old setup of the instrument, read during last parameter update, is used. So the USB-stick does not need to be present for the instrument to operate. Only if changes in the settings must be done, or a log-file generated, the USB-stick must be present.

♦ Turn on switch on backside (press the I edge).

♦ Turn the instrument ON on the ON/OFF button on front.

♦ The instrument will now perform a self-test.

♦ The current software-version will be shown.

♦ If the USB-stick is in the instrument, then the USB is read to check for changes in the settings (system.csv, config.csv and cal.csv). While the files are read a "USB" is displayed.

♦ Now, depending on parameter 2066 (system.csv):

- 2066 = 1 : the initial (calibrated) zero is found
- 2066 = 0 : zero is set to the current load.

♦ The instrument is now ready for use.

♦ If desired, a preload may be zero'ed or tared using the appropriate key.

♦ The instrument will now display the current load.

♦ To start logging of the load use the “DISK” key. (The USB-stick must be present)

♦ Depending on the parameter 2164 (config.csv):

- 2164 = 0 : the file is automatically opened/ closed
- 2164 = 1 : the file is opened / closed with “DISK”-key
- Note, for short log (< 10 sec.) interval use 2164 = 1
- File-name for 2164 = 0 : ALFA-S.CSV
- File-name for 2164 = 1: ALFA-Q.CSV

♦ When the file is accessed “FILE” is displayed.

♦ BE AWARE: If 2164 = 1 is used the file MUST be closed with the “DISK”-key. Otherwise the data may be lost.

♦ The files (ALFA-S.CSV or ALFA-Q.CSV) are automatically generated if they can’t be found on the USB-stick. If they are found, then new data are appended to them.

♦ The date and time in the config.csv are used for the logging. So if you wish to use current date and time, parameter 2170 through 2174 must be set to current date & time prior to the logging of data. The running update of date & time during the log is only valid as long as the instrument remains switched on. When turned off, the settings falls back to last setting (the values in config.csv).

♦ When finished for the day, switch off the instrument on the front

♦ *If a battery is build in (the 230V version) and the instrument isn´t to be used for a longer periode, do switch off the instrument on the back as well. Be however sure to have charged the battery before doing so. The best thing to do however, if the instrument isn´t to be used for a periode of time, is to leave the instrument connected to 230V throught the 9V adaptor and the switch on the back left ON. This way the battery is kept charged and this ensures a long lifespan for the battery.*

ALFA-S.CSV

The ALFA-S.CSV is the logfile for the 2164 = 0 setting. The -S part indicates this and can be translated to the **S**low logging file.

The file is opened and closed for each write to the file.

When the “DISK”-key is activated in this (2164 = 0) mode no “OPEN” and no “CLOS” is shown. Only a “FILE” is shown for each access to the file.

This operationmode is the “Safe” way to operate the instrument if data-security is the top priority. As the file is closed and the file-registration is updated for each write, the file is always up to date. So a power failure is not likely to corupt the file.

Data are stored in the following format compatible with Excel
dd-mm-yyyy;hh:mm:ss; xxx.x;

ex:

15-01-2010;15:35:00; 284.5;
15-01-2010;15:40:00; 100.0;
15-01-2010;15:45:00; 100.0;

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ALFA-Q.CSV

The ALFA-Q.CSV is the logfile for the 2164 = 1 setting. The -Q part indicates this and can be translated to the **Q**uick logging file.

The file is opened and closed with the “DISK” key. When opened with the “DISK” key it remains open until closed with the “DISK” key.
When the file is opened a “OPEn” is shown in the display.
When the file is closed a “CLOS” is shown in the display.
Additional will “FILE” be shown for each access to the file.

This operationmode is the “Unsafe” way to operate the instrument but shorter interval between the logs is possible. The “unsafe” part of this mode is that the file is opened and although data are written to the file, no information in the file-register is written. Only when closing the file this file-information is recorded in the file-register. When no file-information exist the file seems to be empty. So if the file is not closed proberly the operating system on the PC will deem the file to be empty, dispite it holds all the logged data. So the data are inaccessible to the average user. *A skilled PC-operator will be able to read the data none the less.*

Note: The file can get **very** large when running with a short logging interval for many hours. E.g. will a 1 second log interval over 24 hours generate a 5Mb file.

Data are stored in the following format compatible with Excel
dd-mm-yyyy;hh:mm:ss; xxx.x;

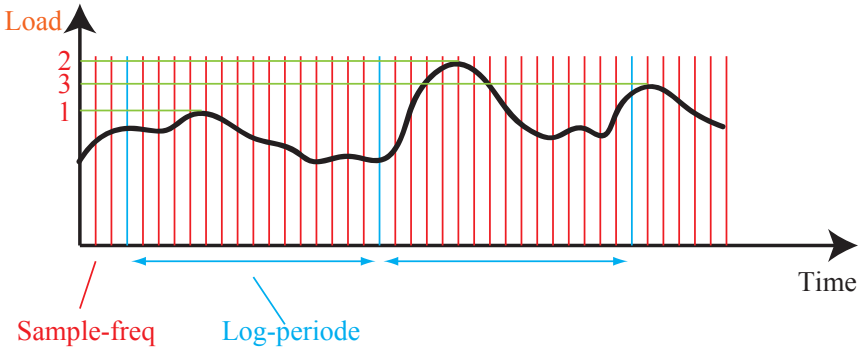
ex:

15-01-2010;15:35:35; 284.5;
15-01-2010;15:35:36; 144.5;
15-01-2010;15:35:37; 100.0;

Setting up the log

How does the log work:

There are 4 parameters which rules the way the log works.



1: The sampling frequency. This is set in parameter 2002 (system.csv)
2: The size of the filter. This is set in parameter 2019 (system.csv)
3: The log-interval. This is set in parameter 2162 (config.csv)
4: The file-write setting. This is set in parameter 2164 (config.csv)

How to set the sampling frequency:
The quicker the signal is the faster the sample-frequency has to be set (max 100 Hz). This to be able to read the signal before it changes again. The red lines above indicates when the sampling is done. So the faster the signal is, the faster you have to sample.

How to set the filter:
The filter is the number of samples that are averaged. So if the signal is very noisy, i.e. not real change in load, but changes in the signal none the less, increase the filtersize. However it might be better to lower the sample frequency instead, as this - due to the sigma-delta converter - acts like averaging itself. We recommend that size is kept at a value of 1.

How to set the log interval:
The log interval is the time between each write to the log-file. In the above figure, log 1 is the peak between start and end of log-interval 1. What the level of the signal is at the time of writing the log 1 has no bearing on what is written to the file. It is only the peak value in the log-interval that is written. So if the reason for logging is keeping an eye on the max load over a periode of time, disregaring when it happened, you can set the log-interval to a high value (max 600 sec. = 10 minuts). But if you want to know exactly when it happened, set the value to a low value (min 1 sec.)

How to set the log mode:
The log-mode can be set to both down to a log-time of 10 seconds. Below 10 seconds only the quick mode, i.e. keep the file open, is relevant. If Slow mode (open and close for each write) is selected for log-intervals less that 10 seconds, data may be lost, i.e. not written, as the file may not be ready when the log-interval expires.

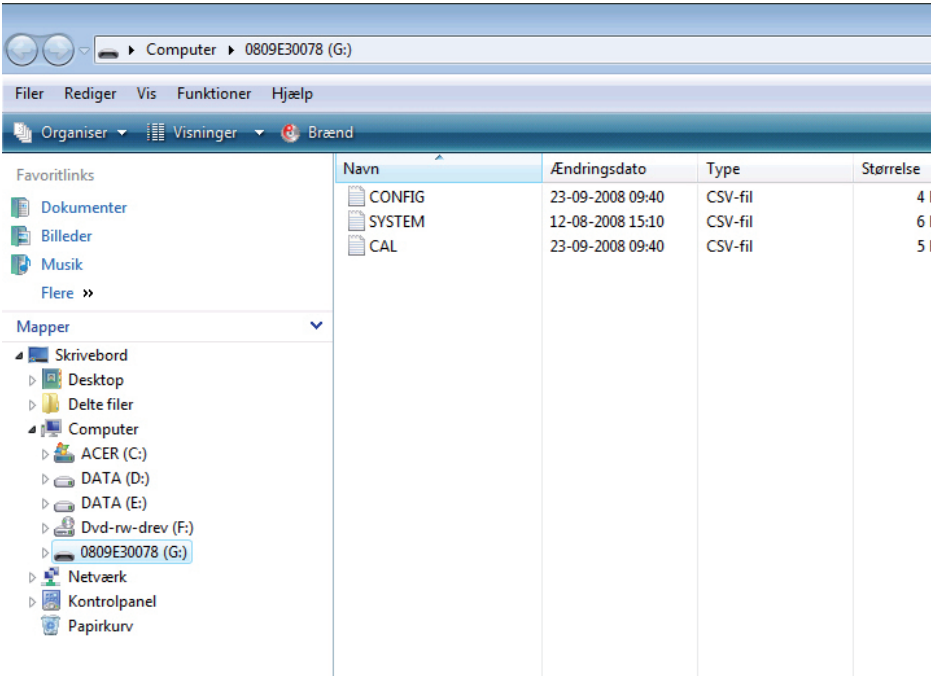
Note: Even during quick mode occasional loss of 1 log may occure due to a buffer-write delay in the USB when a “page” (512 bytes) of data are written.

Setup of instrument

The instrument can be individual configurated.

On the USB-Flash three files, SYSTEM.CSV, CONFIG.CSV and CAL.CSV has been placed. These files can be used to individualise the instrument configuration. Note: Filenames MUST be in uppercase !

Note however that the setting of the instrument has been done to factory standards. Changing of the settings is only to be done by trained technicians.



System.csv

```
0000;0;---------SYSTEMSETTING-------------
0000;0;SHOULD NOT BE CHANGED. FACTORY-SETTING
0000;0;This File MUST be placed in the root of the USB-Stick.
0000;0;The format is fixed. Do not change.
0000;0;We recommend Microsoft Notebook as editor. Note Excel may change format which leads to malfunction.
0000;0;It must be stored using Unicode
0000;0;
0000;0;Each parameter below is self-explaining.
0000;0;
1001;3.01;   Version of format - Do not change
1002;0;      Read/Write SystemSettings. 0 = don´t do anything,  1 = Read settings from Instrument. 2 = Write these
2000;0;      Operation Mode (0 = Ecco 101, 1 = Ecco 201, 2 = Ecco 204, 3 = Ecco 301, 4 = Ecco 501)
2001;2;      PowerUp Mode   (1 = Long Powerup with key-test, 2 = Quick powerup)
2002;6;      Sampling-frequency for A/D converter in hertz  ( 6 - 100 Hz), Applies to all channels
2010;1;      Channel 1 - Configuration ( Input 1 = 1, Input 2 = 2, Input 3 = 4, Input 4 = 8, Can be combined binary)
3011;500.0;  Channel 1 - Maximum load                                          ( 0 - 5 digits + '.' )
3012;0.0;    Channel 1 - Minimum load                                          ( 0 - 5 digits + '.' )
3013;0.5;    Channel 1 - "e" - division                                        ( 0 - 5 digits + '.' )
3014;0.5;    Channel 1 - "d" - division                                        ( 0 - 5 digits + '.' )
3015;0.5;    Channel 1 - Rounding                                              ( 0 - 5 digits + '.' )
4016;Bar;    Channel 1 - Unit for Load                                         ( Text, max 4 char   )
3017;25.0;   Channel 1 - Motion, changes in units / sec.                       ( 0 - 5 cifre + '.' )
2018;1;      Channel 1 - Filterfunction                                        ( 0 = no filter, 1 = average )
2019;1;      Channel 1 - Filtersize                                            ( Number of samples in filter )
2060;1;      Backlight - Switch on at power up                                 (0 = no, 1 = yes )
2061;100;    Backlight - power                                                 (0 - 100 %       )
2062;50;     Display   - Contrast                                              (0 - 100 %       )
2063;0;      Buzzer    - power                                                 (0 - 100 %       )
2064;1;      Power saving - standby or switch off. Note:date & time lost when off  (0 = standby,  1 = off)
2065;0;      Automatic  zero-tracking                                          (0 = no, 1 = yes )
2066;1;      Automatic  zero at power up (zero = current load at power up)     (0 = yes,1 = no  )
2067;9600;   Seriel communication, - Baudrate                                  (1200 - 19200)
4068;n;      Seriel communication, - parity                                    ( n, e, o )
2069;8;      Seriel communication, - databit                                   ( 7 eller 8 )
2070;1;      Seriel communication, - stopbit                                   ( 0, 1, 2 )
2071;0;      Seriel communication, - hw handshake RTS & CTS                    (0 = nej, 1 = ja)
```

Example on settings.
To change setting open the configuration-file with a text-editor (*must* be compatible with Uni-code).Use Windows® Notebook.
The parameters are all selfexplaining.

Config.csv

```
0000;0;---------USER - CONFIGURATION-----------
0000;0;SHOULD NOT BE CHANGED. FACTORY-SETTING
0000;0;This File MUST be placed in the root of the USB-Stick.
0000;0;The format is fixed. Do not change.
0000;0;We recommend Microsoft Notebook as editor. Note Excel may change format which leads to malfunction.
0000;0;It must be stored using Unicode
0000;0;
0000;0;Each parameter below is self-explaining.
0000;0;
1001;3.01;   Version of format - Do not change
1010;0;      Read/Write Configuration. 0 = don´t do anything,  1 = Read configuration from Instrument. 2 = Write
2154;0;      Enable relays                              ( 0 = no, 1 = yes )
3155;20.0;   Relay 2: Lowest  level                     ( load - unit according to system.csv )
3156;40.0;   Relay 3: Desired level                     ( load - unit according to system.csv )
3157;2.0;    Relay 3: Tolerance on desired level        ( ± tolerance )
3158;60.0;   Relay 4: Highest level                     ( load - unit according to system.csv )
2160;0;      Relay 5: Zero / Motion                     ( 0 = motion, 1 = zero + motion)
2162;1;      Log-timer, Log interval                    ( time in sec. max 600 sec.)
2164;1;      Open file and keep it open                 ( 0 = no 1 = yes  )
0000;0;
0000;0;      Time and date for instrument.
0000;0;      The instrument will not continue to update the current time & date when off (it will if in stan
0000;0;      So if the instrument is switched off after operation, the time and date is void.
0000;0;      To set the time & date, please set parameter 2170 - 2174 below to current time & date.
0000;0;      (Please note that parameter 1010 has to be set to 2 as well, which means that all settings in t
0000;0;      Then insert the USB-stick in the instrument and power it up.
0000;0;      The time & date below will then be transfered to the instrument.
0000;0;      The instrument will keep the time & date updated as long it's powered or in standby.
0000;0;      If powered off, the instrument will fall back to the most current transfer of time & date from
0000;0;
0000;0;      Current Time and date (format = day, month, year, hour(24), minute) (e.g. 08/07/2009-18:08)
2170;30;     Day
2171;1;      Month
2172;2010;   Year
2173;17;     Hour
2174;45;     Minute
```

Example on settings.
To change setting open the configuration-file with a text-editor (*must* be compatible with Uni-code).Use Windows® Notebook.
The parameters are all selfexplaining.

Cal.csv

```
0000;0;---------CALIBRATION------------
0000;0;SHOULD NOT BE CHANGED. FACTORY-SETTING
0000;0;This File MUST be placed in the root of the USB-Stick.
0000;0;The format is fixed. Do not change.
0000;0;We recommend Microsoft Notebook as editor. Note Excel may change format which leads to malfunction.
0000;0;It must be stored using Unicode
0000;0;
0000;0;Calibration - Procedure
0000;0;
0000;0;Both zero and full-scale calibration can be performed for each channel. Seperate zero or full-scale can
0000;0;In parameter 1006 and 1007 the channel to be calibrated is selected. (Only 1 channel can be calibrated
0000;0;For instance choose 1006 = 1 if channel 1 is to be zero calibrated.
0000;0;
0000;0;NOTE: The parameter 1005 should be left at 0 if either 1006 or 1007 holds none zero values.
0000;0;
0000;0;The procedure in details by example
0000;0;Ex: Channel 1 must be both zero and full-scale calibrated.
0000;0;
0000;0;Parameter 1006 = 1, Parameter 1007 = 1
0000;0;
0000;0;With the instrument off, insert the USB-stick in the far right connector
0000;0;Turn the instrument ON
0000;0;Wait for the display to show CAL 0  (for zero calibration)
0000;0;Wait for 5 sec., then press the "DISK"-key
0000;0;Wait for the display to show CAL F  (for full calibration)
0000;0;Wait for 5 sec., then place the load on the scale (The load must be the parameter 3100 value, e.g. 500.000)
0000;0;Wait for the load to settle
0000;0;Wait for 5 sec., then press the "DISK"-key
0000;0;
0000;0;The instrument will now write the calibration values to the internal memory AND write a copy of them to the
0000;0;in the two parameters 3104 and 3105 (valid for this example which calibrated channel 1)
0000;0;
0000;0;Then the two parameters 1006 and 1007 are automatically both set to 0 (to avoid a renewed calibration at
0000;0;
0000;0;Now the instrument has been calibrated and a backup of the calibration values have been made to the USB-
0000;0;
0000;0;
0000;0;The calibration can be restored to th instrument by setting the 1005 = 2. The values from the USB-stick will
0000;0;then be transfered to the instrument.
0000;0;
0000;0;Note: this is true for the full-scale calibration value too. This can be changed by entering a new valuer to
0000;0;the calibration. Ex:  1005 = 1 and  3100 = 250.0000 changes the load to 250 instead. So when the calibration
0000;0;of the full-scale (parameter 1007 = 1) is done, then the load must be 250.0000 and not 500.0000
0000;0;
1001;3.01;      Version of format - Do not change
1005;0;         Read/Write Calibration don´t do anything,  1 = Read calibration from Instrument. 2 = Write this
1006;0;         Calibration        - Zero    ( 0 = no, 1 - 4  = logical channel )
1007;0;         Calibration        - Loaded  ( 0 = no, 1 - 4  = logical channel )
3100;500.0000;  Logical channel 1  - Calibration-load
3104;0.0000;    Physical channel 1 - Current Calibration-value for Zero   (written automatically), format = mV/V
3105;2.0000;    Physical channel 1 - Current Calibration-value for Load   (written automatically), format = mV/V
3112;0.0000;    Current referencevalue for Zero (written automatically), format = mV/V
3113;4.0000;    Current referencevalue for FULL load (written automatically), format = mV/V
```

Example on settings.
To change setting open the configuration-file with a text-editor (*must* be compatible with Uni-code).Use Windows® Notebook.
The parameters are all selfexplaining.

Calibration procedure

- ♦ Check that the tranducer is physical ok.
- ♦ Check that all connections are correct.
- ♦ Turn on the instrument on the back-side.
- ♦ Turn the instrument ON on the ON/OFF button on front.
- ♦ The instrument will now perform a self-test.
- ♦ The current software-version will be shown.
- ♦ The zero is found (may take a little while depending on the settings).
- ♦ The instrument is now ready for use (see below, however).
- ♦ If the instrument doesn´t show the right load do:
- ♦ Turn OFF the instrument on the ON/OFF button on the front.
- ♦ Setup the cal.csv file for calibration (parameter 1006; 1; og 1007; 1;)
- ♦ Insert the USB-stick and turn ON the instrument.
- ♦ Wait for the instrument to display CAL-0
- ♦ When the zero-load is stable press the “DISK”-button.
- ♦ The zero is now read.
- ♦ Wait for the instrument to display CAL-F
- ♦ Place the load (the load must be the value written in parameter 3100)
- ♦ When the load is stable press the “DISK”-button.
- ♦ Now the calibration load is read.
- ♦ Await the values to be written to the USB-stick.
- ♦ While writing to the USB-stick ”USB” will be displayed.
- ♦ When the writing to the USB-stick is completed then switch off.
- ♦ Remove the USB-stick and store it for future reference.
- ♦ The instrument is now calibrated and can be used again.

The USB-stick must be stored safely. The USB-stick contains setup-files to be used when setting up the instrument or calibrating the instrument. A backup may be done, but it’s important that the USB-stick to be used with the instrument is compatible with the FAT16 format.