Laser configuration file

The configuration settings of the laser are stored in a file inside the harddisk of the laser (a DiskOnModule or CompactFlash depending on the laser model). This configuration file is a simple ASCII file with several entries of type <key>:<value>, where <key> represent a parameter and <value> the corresponding value that can be a string or a numerical value (integer or float).
The configuration file has the name "sysvars.cnf". On startup of the system the firmware searches for this file to load the settings according to the content of this file. With the TCP/IP- or RS232 protocol you can upload a new configuration file (0xB2 command for RS232, 0x0061 command for TCP/IP) to the laser's harddisk. With the 0x50 or 0x49 command (RS232) or the option-BYTE 0x50 and 0x49 in the copy command (TCP/IP) you can force the laser to load the new configuration into memory.

The following list gives you a short description of each possible <key>:<value> entry. A more detailed description of each parameter can be found in the GUI's (graphical user interface) help .

Laserconfig: <version + date>

Specifies the firmware version number that stored this configuration file.

MAC: 00AA22BB44FF

Specifies the MAC address of the system that stored this configuration file.

Dynamicmode: 1

The printing mode of the laser. Possible values are 0 (static) , 1 (dynamic-standard), 2 (dynamic-distance), 3 (static-dynamic).

Autoshift: YES

Shifts the message automatically to the left/right side of the marking area in dynamic printings. Possible values: YES and NO.

Autodistance: 0.000

Defines the printing distance between two products in dynamic-distance mode. The value must be set as distance in [mm] x (100/fieldsize in [mm]).

N-prints: 0

Defines the maximum number of prints in dynamic-distance mode.

Sortobjects: 0

When set to 1, the objects to be printed are ordered according their x position in dynamic mode. When set to 0, the objects are printed in the order as they appear in the layers.

Direction: RIGHT

Defines the moving direction in dynamic printing. Values are RIGHT or LEFT. Any other value than this means automatic direction detection.

Encoder: EXTERNAL

Defines the encoder type. Possible values are INTERNAL, EXTERNAL, EXTRAPOLATED.

Position: POS1

Lets you toggle the left and right direction when automatic direction detection is enabled. Possible values are POS1 and POS2.

Activation: 5

Defines the trigger signal. Possible values are 1 (off), 2 (activated or high), 3 (deactivated or low), 4 (trigger up) and 5 (trigger down).

Type: PLC

Defines the input for the trigger signal. Values are PLC (for the PLC input) , PHOTOCELL1 (standard photocell input), PHOTOCELL2 (optional photocell input).

Stopsignal: 0

Defines an optional stopsignal. A stopsignal is defined by the used input and the level (high/low) that must be applied to stop printing. The value must be set as a hexadecimal number.
Bit0 defines the polarity of the stopsignal (0 low, 1 high).
Bit1 defines the behaviour of the stopsignal. If set to 1 the actual print is aborted else the actual print is still finished.
Bit8-Bit12 defines the input signal and is a number from 0 – 31. If this number is 0 the stopsignal is disabled and not used. Other values for this number are defined as follows:
1 - 16: Bit0 - Bit15 of external IO-bits.
17: PLC input.
18: Photocell input.
19: Photocell2 input (optional)

other values has actually no effect and are reserved for future applications.

Velocity: 16.667

Defines the internal velocity when internal encoder is used. The value must be set as
velocity in [m/min] x (100/fieldsize in [mm]).

Encoder_steps: 3000

Defines the number of encoder steps per turn.

Photocell_dist: 0.000

Defines the photocell distance for dynamic printing and/or a time delay for printing in static mode. The value must be given as

distance in [mm] x (100/fieldsize in [mm]) for the dynamic mode or as

time-delay in [ms] for the static mode.

Encoder_mm:

Defines the distance of product movement for a complete turn of the encoder. The value must be set as

distance in [mm] x (100/fieldsize in [mm]).

Encoder_type: 0x00000000

A bit-field that defines some aditional options of the encoder type.

Bit0: 0x00000001 ,when set defines that only the A-channel of the encoder is available. This option is only useful for DSP-cards.

Bit1: 0x00000002 , when set it inverts the 'main' moving direction when this direction is obtained with an external signal (for DSP-cards only).

Bit2: 0x00000004 , used for marking on rotating cylinders. When enabled and the cylinder diameter is set to a value <> 0 the encoder stepsize is automatically calculated from the steps per turn and the diameter of the cylinder. In this case the "mmperturn" parameter is ignored.

Offset: 0.000

Actually not used.

Focal_dist: 160000.000

Defines the focal distance of the lens. The value must be set as

distance in [mm] x (100000/fieldsize in [mm]).

Mirror_sep: 0.000

Defines the distance between the galvo mirrors in [micrometers]. This value is set to 0.000 for all systems that uses a f-theta lens. Only for systems with a prefocal lens this value must be set to a non-zero value (T-3200 series).

Max_distance: 100000

Defines the squared field size of the marking area in [micrometers].

Lens_xcorrection: 350.000

Defines the value for the lens correction in x direction. Only positive values are allowed. Typcial values range from 0 to 500.

Lens_ycorrection: 350.000

Defines the value for the lens correction in y direction. Only positive values are allowed. Typcial values range from 0 to 500.

Lens_xgaincorr: 0

Defines the kx correction factor (see GUI help). Values range from -5000 to + 5000.

Lens_ygaincorr: 0

Defines the ky correction factor (see GUI help). Values range from -5000 to + 5000.

Lincorrx: 2000

Defines the linearity correction in x. Values range from 0 to 10000.

Lincorry: 2000

Defines the linearity correction in y. Values range from 0 to 10000.

Dimx: 5000

Defines the dimension correction in x. Values range from 0 to 5000.

Dimy: 5000

Defines the dimension correction in y. Values range from 0 to 5000.

Tanx: 0

Defines the correction angle in x. Values range from -10000 to +10000 and are in [microradian].

Tany: 0

Defines the correction angle in y. Values range from -10000 to +10000 and are in [microradian].

Do_lens_corrections: YES

Activate/deactivates the lens correction. Possible values are YES and NO.

Do_scanner_corrections: YES

Activate/deactivates the scanner correction. Possible values are YES and NO.

Gain_x: 61

Defines the gain in x. Values range from 24 to 64.

Gain_y: 61

Defines the gain in y. Values range from 24 to 64.

Gainoffset_x: 0.000

Defines an offset for the Gain_x parameter. Typical values are from -2.0 to +2.0.

Gainoffset_y: 0.000

Defines an offset for the Gain_y parameter.

XSYMMETRY: 0.000

Corrects the scanfield symmetry in x direction.

YSYMMETRY: 0.000

Corrects the scanfield symmetry in y direction.

Max_inert: 20,120,120,120,

Defines the scannerdelay at the end of a marking line in [microseconds]. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Inert_r: 1, 1,1,1,

Defines a dimensionless number for controlling the applied delay at the end of a marking line. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Start_inert: 0,0,0,0,

Defines the scannerdelay at the start of a marking line in [microseconds]. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Delay: 20,80,80,80,

Defines the jumpdelay for a jump command in [microseconds]. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepsize: 400,400,400,400,

Defines the stepsize used for scanner jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3. The values must be given as

stepsize in [mm] x (100000/fieldsize in [mm]).

Movedelay: 80,80,80,80,

Defines the delay at the end of a jump command in [microseconds]. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed0: 1.00,1.00,1.00,1.00,

Defines the speed factor for very small jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed1: 1.00,1.00,1.00,1.00,

Defines the speed factor for small jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed2: 1.00,1.00,1.00,1.00,

Defines the speed factor for normal jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed3: 1.00,1.00,1.00,1.00,

Defines the speed factor for medium jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed4: 1.00,1.00,1.00,1.00,

Defines the speed factor for large jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed5: 1.00,1.00,1.00,1.00,

Defines the speed factor for very large jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Stepspeed6: 1.00,1.00,1.00,1.00,

Defines the speed factor for largest jumps. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Poligondelay: 0,0,0,0,

Defines the poligondelay in [microseconds]. Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Laserondelay: 0,0,0,0,

Defines the laserOn delay in [microseconds].
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Laseroffdelay: 0,0,0,0,

Defines the laserOFF delay in [microseconds].
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Ondelayactive: 0,0,0,0,

Defines the when the Laserondelay should be used. Possible values are 0 (always active) , 1 (only active at start of a print), 2 (active before printing any object).
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Laseron_maxdelay: 0,0,0,0,

Defines the Laseron_maxdelay in [microseconds].
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Laseron_maxofftime: 0,0,0,0,

Defines the Laseron_maxofftime in [microseconds].
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Laseron_minofftime: 0,0,0,0,

Defines the Laseron_minofftime in [microseconds].
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

VD_ON: 0,0,0,0,

A FIFO LaserOn delay [microseconds]. The LaserOn signals are delayed through a FIFO by this value + an internal systemparameter. The value is used for any kind of vector printing.

VD_OFF: 0,0,0,0,

A FIFO LaserOff delay [microseconds]. The LaserOff signals are delayed through a FIFO by this value + an internal systemparameter. The value is used for any kind of vector printing.

PX_D: 0,0,0,0,

A FIFO LaserOn/LaserOff delay [microseconds]. The LaserOn and LaserOff signals are delayed through a FIFO by this value + an internal systemparameter. The value is used for any kind of pixel printing.

PW1_D: 0,0,0,0,

A FIFO power bit delay [microseconds]. The power1-bit signals are delayed through a FIFO by this value + an internal systemparameter. The value is used for vector and pixel printing.

PW2_D: 0,0,0,0,

A FIFO power bit delay [microseconds]. The power2-bit signals are delayed through a FIFO by this value + an internal systemparameter. The value is used for vector and pixel printing.

TRACKING_D: 0,0,0,0,

A generic FIFO delay [microseconds]. This delay is added to the previous delays VD_ON, VD_OFF, PX_D, PW1_D, PW2_D. In most cases all other delays can be set to 0 and just the TRACKING_D is used for syncronizing the scanners with the laser signals.

Enableaccdots: DISABLED,DISABLED,DISABLED,DISABLED,

Activates the prescan for vector printing. Possible values are ENABLED and DISABLED.
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Accdots: 0,0,0,0,

Defines the number of prescan dots for vector printing.
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Accdotsvfactor: 1.000,1.000,1.000,1.000,

Defines the velocity factor of the prescan velocity for vector printing.
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Postdots: 0,0,0,0,

Defines the number of postscan dots for vector printing.
Up to 4 values , separated by a ',' can be defined corresponding to scanner-set 0 – 3.

Minpowerlevel: 45

Defines the minimum power level setting in [percent].
Tickelpulse: 1.0

Defines the tickle pulse length in [microseconds].

Tickelperiod: 200.0

Defines the tickel pulse period in [microseconds].

Laser_type: 16

Defines the type of laser. Valid numbers are:

1	standard CO2
7	old 100W cw CO2 laser (obsolete)
8	old 100W pulsed CO2 laser (obsolete)
14	D-5005 YAG laser
16	T-3100, K-1070, K-10780 CO2 laser
17	D-5010 YAG laser, D-5010 MK2 laser
18	D-5020 YAG laser, D-5020 MK2 laser
19	D-5100 YAG laser
20	pulsed fiber laser
21	cw fiber laser
22	D-5000 B1 YO4 laser

RS232 address: 254

Defines the principal RS232 address of the laser.

Al_laser_off: ENABLED

Activates the interlock alarm. Values are ENABLED or DISABLED.

Al_shutter_off: ENABLED

Activates the shutter alarm. Values are ENABLED or DISABLED.

Al_OEMSHUTTER: ENABLED

Activates the OEM shutter alarm. Values are ENABLED or DISABLED.

Al_beltstop: DISABLED

Activates the beltstop alarm. Values are ENABLED or DISABLED.

Al_beltspeed: 0.040

Defines the minimum belt speed in [m/min].

Al_overspeed: DISABLED

Activates the overspeed alarm. Values are ENABLED or DISABLED.

Al_triggersignal: DISABLED

Activates the triggersignal alarm. Values are ENABLED or DISABLED.

Triggercount: 3

Defines the number of allowed triggers during a print.

Check_Mindist: DISABLED

Activates the min. distance alarm. Values are ENABLED or DISABLED.

Mindistance: 0.000

Defines the min. distance for the min. distance alarm.
The value must be set as
distance in [mm] x (100000/fieldsize in [mm]).

Check_Maxdist: DISABLED

Activates the max. distance alarm. Values are ENABLED or DISABLED.

Maxdistance: 0.000

Defines the max. distance for the max. distance alarm.
The value must be set as
distance in [mm] x (100000/fieldsize in [mm]).

CHECKSCANNERS: DISABLED

Activates the XY scanner alarm. Values are ENABLED or DISABLED.

CHECKSCANNERZ: 0

Activates the Z scanner alarm. Values are 1 (LOW is alarm) or 2 (HIGH is alarm).

CHECKARMED: DISABLED

Activates the 'Laser is armed'. Values are ENABLED or DISABLED.

CHECKOTEMP: DISABLED

Activates the overtemperature alarm. Values are ENABLED or DISABLED.

CHECKEMPTYFILE: DISABLED

Activates the empty file alarm. Values are ENABLED or DISABLED.

CHECKLASERREADY: DISABLED

Activates the laser not ready alarm. Values are ENABLED or DISABLED.

CHECKPOWER: DISABLED

Activates the DC power alarm. Values are ENABLED or DISABLED.

CHECKQSWITCH: DISABLED

Activates the Q-switch alarm. Values are ENABLED or DISABLED.

CHECKWARMUP: DISABLED

Activates the warmup alarm. Values are ENABLED or DISABLED.

CHECKOEM: 0

Defines the programable OEM alarm. The OEM alarm is defined by the used input and the level (high/low) that must be applied to fire the alarm. The value must be set as a hexadecimal number.
Bit0 defines the polarity of the stopsignal (0 low, 1 high).
Bit8-Bit12 defines the input signal and is a number from 0 – 31. If this number is 0 the OEM alarm is disabled and not used. Other values for this number are defined as follows:
1 - 16: Bit0 - Bit15 of external IO-bits.
17: PLC input.
18: Photocell input.
19: Photocell2 input (optional)

other values has actually no effect and are reserved for future applications.

CHECKOEMSTRING: External alarm

Defines the string to appear in the GUI or the handheld terminal when the OEM alarm is fired.

CHECKBEHAVE: NONSTOP

Defines the behaviour of the system when an alarm occures. Possible values are NONSTOP or an empty string.

Lresolution: 10

Defines the layer resolution parameter for adjustment prints with the GUI.

Lpower: 100

Defines the layer power parameter in [percent] for adjustment prints with the GUI.

Lfrequency: 50

Defines the layer frequency parameter in [kHz] for adjustment prints with the GUI.

Lspeed: 1000000

Defines the layer speed parameter in [micrometer/s] for adjustment prints with the GUI.

Pointer_corrx: 1000

Defines the pointer correction value in x.

Pointer_corry: 1000

Defines the pointer correction value in y.

Pointer_offx: 0

Defines the pointer correction offset in x.

Pointer_offy: 0

Defines the pointer correction offset in y.

PointerVelocity: 10000

Defines the pointer velocity in [mm/s].

Pointer_x: 0

Defines the x position value for the optional focal pointer. Values are in ideal coordinates and range from [-50000, + 50000] and cover the complete scanfield. A value of 0 represents the center of the scanfield.

Pointer_y: 0

Defines the y position value for the optional focal pointer.

Gateon: DISABLED

Enables or disables the general gateOn option for bitmap marking. Values are ENABLED or DISABLED.

Enableaccpix: DISABLED

Enables or disables the general prescan option for bitmap marking. Values are ENABLED or DISABLED.

Accpixel: 10

Defines the number of prescan pixels when the prescan for bitmap marking is enabled.

Laseronpix: 10

Defines the number of the prescan pixel from which on the laser should be turned on.

Prescanloop: 0

Do not use this parameter or set its value to 0.

Prescanv: 20000

The prescan velocity for general bitmap printing in [mm/s] when "Matched V" is set to 0.

Matched V: 1

When set to 0, the prescan for bitmap printing is done with the velocity defined with PrescanV.
When set to 1, the prescan velocity is adjusted automatically to the velocity for a blank pixel.

InvertX: DISABLED

Inverts the x-axis. Values are ENABLED or DISABLED.

InvertY: DISABLED

Inverts the y-axis. Values are ENABLED or DISABLED.

InvertXY: DISABLED

Interchange the x-axis with the y-axis. Values are ENABLED or DISABLED.

Autopointer: DISABLED

Enable/disable the autopointer. Values are ENABLED or DISABLED.

Notify: DISABLED

GUI specific parameter. When enabled the laser sends a notify message over TCP/IP to a possible connected GUI client to indicate a change of the external message selection.

Reloadmessage: DISABLED

GUI specific parameter. When enabled the laser sends a notify message over TCP/IP to a possible connected GUI client to force a reload of the message file over the GUI in case of a change of the external message selection. Values are ENABLED or DISABLED.

Reloadonchange: DISABLED

GUI specific parameter. Not used by the laser. Values are ENABLED or DISABLED.

Printinfo: 4

GUI specific parameter. A numeric value that determines the behaviour of the laser's notification messages to a possible connected GUI client. Bitwise interpretation:

Bit0: when set, laser sends status notifications to the GUI after each print.
Bit1: when set, laser sends request notifications to the GUI after each print.
Bit2: must be set always (is set automatically in all newer firmware versions)

Excludemask: 0

Defines the bits of the eternal message selection that should not be used to determine the number of the message. The value must be set in hexadecimal. Example: a value of 03 would exclude Bit0 and Bit1 to be used by the external message selection and there value would be internally set to 0 to calculate the message number.

Endsignal_dynamic: DISABLED

Activates the endsignal in dynamic mode. Values are ENABLED or DISABLED.

Endsignal_static: DISABLED

Activates the endsignal in static mode. Values are ENABLED or DISABLED.

IfNoAlarm: DISABLED

When enabled the endsignal will only be set when the mark has finished without any alarm. Values are ENABLED or DISABLED.

IfAlarmOnly: DISABLED

When enabled the endsignal will only be set when the mark has finished with an alarm. Values are ENABLED or DISABLED.

IfPrintNotOK: DISABLED

When enabled the endsignal will only be set when the mark has finished not correctly. Values are ENABLED or DISABLED.

Endsignaltime: 100

The time of the endsignal in [ms].

EndsignalRS232: 0

Enables the endsignal over the RS232 port. When set to 0, no RS232 signal is beeing sent. When set to 1 or 2 , the COM port 1 or 2 , respectively, is used for the endsignal.

EndsignalTCP: 0

Enables/disables the optional endsignal over TCP/IP. Values are 0 (disabled) and 1 (enabled).

FPSDelay100: 250

First pulse supression delay at 100% power for D-5020 or D-5100 systems. Value is set in [microseconds].

FPSDelay50: 100

First pulse supression delay at 50% power for D-5020 or D-5100 systems. Value is set in [microseconds].

FPSPWM_ENABLED: 0

Activates the first pulse supression for CO2 lasers. Values are 0 (disabled) and 1 (enabled).

FPSPWM_TIME: 100

First pulse supression time for CO2 lasers in [microseconds].

FPSPWM_DUTY: 70

First pulse supression relative duty cycle for CO2 lasers. Value is set in [percent] of the actual duty cycle.

PWMDELAY: 0.0

Defines a delay in microseconds of the PWM-signal with respect to the Gate signal (the LaserOn signal). Is used only for the YAG-laser type. (DSP scannercards only)

GATELENGTH: 1.0

Defines an optional length of the Gate signal for YAG lasers in microseconds. The Gate signal for YAG lasers is typically used as a FPK signal. Note that you probably have to set the PWM-delay to a value slightly larger then the Gate length if you want ot use this feature for supressing the first pulses of YAG lasers. (DSP scannercards only)

PWMRAMP: 0

Defines a ramp length in microseconds of the energy modulation signal for supressing the first pulse. Is used only for the YAG-laser type. (DSP scannercards only)

PWMOPTIONS: 0

A hexadecinmal value defining a bitmask.

Bit0: when set then a tickle pulse may be applied to a YAG laser (DSP scannercard only)
Bit1: when set then the Gate signal of a YAG laser is deactivated (DSP scannercard only)

PWMMINONTIME: 0

Defines the minimum ON-time of the laser in vector marking. Units are microseconds.

FIELDRATIO: 1.0

Defines the ratio of the y-size/x-size of the scanfield. This will limit the scanfield size to a rectangle instead of a square and can be used on special arrangements where the resulting scanfield has been limited due to the hardware settings of the galvo angles. It is only available for DSP scannercards.

USEFORGAIN: 0

When enabled (set to a value of '1'), the gain X, gain Y values will be corrected according to the field ratio if this is not equal to 1.0. It depends on the hardware settings of the galvo drivers if this parameter must be enabled or disabled to achieve the desired fieldsizes.

OPTIONFLAGS: 0

Defines some special options. The value is a decimal number. Various options are set through bitwise combinations.

Bit0: when set, usermessage fields of the actual message are reset to an empty string after each print.
Bit1: when set, messages are stored by the GUI locally after having sent them to the laser (GUI specific option).
Bit2: When set, datastring message fields are reset to empy strings after each print.
Bit4: When set, text object are not exploded into single characters for dynamic printing.
Bit8-12: Defines a number from 0 – 31 that defines the direction input-BIT for automatic direction detection in dynamic printing.

Values:

1 - 16: Bit0 - Bit15 of external IO-bits.
17: PLC input.
18: Photocell input.
19: Photocell2 input (optional)

VCORR_DELAY: 200

Defines the systematic delay of the system in [microseconds].

VCORR_TICRES: 150

Defines the minimum number of encoder tics to be counted for the systematic position correction.

VCORR_MINTIME: 20

Defines the minimum duration of the calculated systematic position correction. Values are given in [ms].

ZAXIS_DAC_MAX: 100.0

Sets a software limit in case of a hard bumper for high side of the control output values for the z-movement. Units in percent.

ZAXIS_DAC_MIN: 0.0

Sets a software limit in case of a hard bumper for lower side of the control output values for the z-movement. Units in percent.

ZAXIS_SCALE: 1.000

Factor for scaling the z-axis.

ZAXIS_SLOPE: 1.000

A value that corrects the non-linearity of the z-travel and the z-focus. A value of 1.0 is for a perfect linear relationship.

ZAXIS_MSHIFT: 19

An internal variable used for non-linear corrections of the z-axis. Should be 19 – 25. Default value is 21.

ZAXIS_OFFSET: 0.0

Sets an offset for the z-axis. Value given in percent.

ZAXIS_MAX_ZRANGE: 40.00

Sets the range of the z-axis in percent of the scanfield size.

ZAXIS_SIGN: 1

Defines the direction of the z-travel. This parameter simply depends on the orientation of the used z-axis system. Possible values are 0 and 1.

ZAXIS_FTHETA: 1

If the system uses a prefocal lens this parameter must be set to "0", else to "1". For prefocal lenses the system has to correct the z-axis even for plane surface marking.

ZAXIS_TIME: 20000

Defines the time (in microseconds) that the z-axis needs to travel through the complete travel range.

ZAXIS_ENABLE: 1

An optional z-axis voltage-control can be activated using the 8-bit DAC (0 – 10V) of the SM121 for controlling the focus z-position (T-3200 system). For DSP-cards the z-axis signal is always present. Enable (1) or disables(0) the z-axis.

ZAXIS_MDELAY: 0

Defines a delay (in microseconds) for each z-step that is greater than the ZAXIS_MINZSTEP.

ZAXIS_MINZSTEP: 0.5

Defines the size of the z-step (in percent of the whole travel range) from where on the ZAXIS_MDELAY should be applied.

ZAXIS_FCORR: 0.0,0.0,0.0,0.0

Defines 4 values in units of mm to correct slightly the z-focus according to the position in the scanfield when no F-theta lens is present (prefocal systems).

LEFTBORDER: 0

Defines an unused frame at the left border of the scanfield in dynamic printing. Units are micrometers.

RIGHTBORDER: 0

Defines an unused frame at the right border of the scanfield in dynamic printing. Units are micrometers.

TOPBORDER: 0

Defines an unused frame at the top border of the scanfield in dynamic stepper XY mode. Units are micrometers.

BOTTOMBORDER: 0

Defines an unused frame at the right border of the scanfield in dynamic stepper XY mode. Units are micrometers.

AUTOBORDER: 0

When set to a value > 0 the scanfield's left and right borders will be calculated automatically in case of a dynamically rotating cylinder (rotary mode). The autoborder value must be given in percent. The left and right scanfield border will then be centered to the cylinder axis and the width of the used scanfield is defined by:

used scanfield width = (autoborder/100) x cylinder diameter

A typically value would be 30 %. If you do not specify the Autoborder parameter (0.0), the system will automatically use the maximum left/right border that still falls on the cylinder surface and is reachable by the scanners, except in the case that the left/right borders are explicitly set to a value not equal to 0.

SERVOCONTROL: 0

When set to "1", a servo control is enabled, which means that the laser provides an output signal that indicates if the velocity of the line should be increased or decreased. The type of output signal can be set with the SERVOTYPE variable.

SERVOBORDERLEFT: 0

Defines the frame size at the left scanfield border from where on the laser should indicate a decrease of the line velocity (for dynamic direction RIGHT). The larger the value the later the laser will indicate a "slow-down" of the production line. Units in micrometers.

SERVOBORDERRIGHT: 0

Defines the frame size at the right scanfield border from where on the laser should indicate a decrease of the line velocity (for dynamic direction LEFT) .Units in micrometers.

SERVOMIN: 5

When the SERVOTYPE is "0" or "1", the output signal is given at the 8-bit DAC of the scannercard SM121 (0 - 10V). The SERVOMIN value is the value, that the 8-bit DAC should output in case of the "slowest" velocity for the

production line.

SERVOMAX: 50

When the SERVOTYPE is "0" or "1", the output signal is given at the 8-bit DAC of the scannercard SM121 (0 - 10V). The SERVOMAX value is the value, that the 8-bit DAC should output in case of the "fastest" velocity for the production line.

SERVOTYPE: 0

Defines the output signal for the servo control.
0: the 8-bit DAC of the Sm121 is used. The laser sets the output to the SERVOMIN value in case that the velocity should be slowed down (which is the case when the actual scanfield position reaches the servoborder frame). The laser sets the output to the SERVOMAX value in case that the velocity should be incremented (which is the case when the actual scanfield position has still not reached the servoborder frame).
1: similar to the previous case, but the output value is calculated as a value between the min and max value.
2: the Endsignal relay is used as the output signal. The relay is closed when the production line speed can be incremented and it is opened when the speed should be slowed down.

SERVOACC: 0

Defines the acceleration of the servocontrol. The number is given in bits. The acceleration is performed by incrementing the velocity each 10 ms by this value.

SERVODEC: 0

Defines the decleration of the servocontrol. The number is given in bits. The deceleration is performed by decrementing the velocity each 10 ms by this value.

SERVODIST: 0

Defines the distance from when on the system should decelerate if an object is about to enter into the marking area. The number is given in mm.

SERVOVWRITE: 50

Defines the max. Servo speed when an object is marked in DAC units.

CYLINDER_RADIAN: 0

Defines the radian of a cylinder as the target scanfield. When set to "0", the target scanfield is considered to be plane (default). When you have to mark on a convex cylinder surface, your scanfield will typically be deformed due to the non-plane surface of the target. With the help of the CYLINDER_ variables it is possible to compensate this distortion.
When set to a negative value the cylinder is a half-cylinder and the scanfield is folded onto the inner surface of the cylinder (from firmware 5.2.7 on). Units in micrometers.

CYLINDER_WX: 0

The width (in x-direction) of the scanfield at the lensoutput. When you print a square of the plane scanfield size, this width is width of the rectangle that the laser beam performs at the lens output. This parameter is necessary to calculate the incident angle of the laser beam. Typcially it is in the range of 20 - 25 mm (20000 – 25000). Units in micrometers.

CYLINDER_WY: 0

The height (in y-direction) of the scanfield at the lensoutput. Units in micrometers.

CYLINDER_A0: 0

The distance between the axis of the cylinder and the scanfield center. this variable depends on the position of the plane scanfield with respect to the target cylinder. Units in micrometers.

CYLINDER_INVARIANT: 0

Defines the invariant x (or y) position. This coordinate (x,y) point maps to the (radian,height) or (heigth, radian) point on the cylinder surface. Usually, the value is "0", which means that the center of the plane scanfield corresponds to the (0,0) position on the cylinder surface. Units in micrometers.

CYLINDER_ZDIST: 0

Defines the distance of the focal plane to the cylinder surface. Values > 0 means that the focal plane is placed inside the cylinder.

Note that in some cases (e.g. CYLINDER_ZDIST > 0 or a small CYLINDER_RADIAN), the total scanfield cannot be used, because either the scanfield's size is not enough or the optically reachable cylinder surface is smaller than the plane scanfield. Units in micrometers.

CYLINDER_INVERT: 0

Defines the orientation of the cylinder with respect to the scanfield axis. "0" means that the cylinder axis is along y-axis, "1" means that the cylidner axis is along the x-axis.

MAXIS_PORT: 0

Defines an optional COM-port (1 or 2) that might control an optional x,y,z,r-axis. Note that when you set this to a value of 1 or 2 the corresponding com-port will be reserved for the x,y,z,r-axis, and the standard RS232 protocol would then be disabled for this port.

MAXIS_COUNTSMM: 333.000,333.000,333.000,333.000,

Defines the counts per mm of the optional x,y,z,r-axis (the stepsize of the stepper motors).

MAXIS_OFFSET: 0.000,0.000,0.000,0,.000,

Define the offset in mm for the optional x,y,z,r-axis.

FCORR_TYPE: 0

Defines the type of field correction that should be applied. Valid values are 0 (disabled) and 1 (enabled). The field correction tries to correct differences of the spot size along the scanfield. Typically from the center to the edge of the scanfield the spot size grows, thus some compensation should be done to get uniform marking results. The FCORR parameters define the strength and curve of this correction.

FCORR_DIFF: 30.0

Defines the difference of the compensation correction between the center and the edge of the scanfield (values are in percent).

FCORR_OFFSET: 60.0

Defines the radial symmetric starting point from where on the correction should be done (values in percent of the scanfield).

FCORR_GAMMA: 4.0

Defines the gamma factor used for the calculation of the compensation.

STEPPER_FREQMAX: 2000,2000,2000,2000

The max. frequency of up to 4 stepper motors in [Hz]. Values are given for X,Y,Z,R axis.

STEPPER_FREQMIN: 20,20,20,20,20

The min. frequency of up to 4 stepper motors in [Hz]. Values are given for X,Y,Z,R axis.

STEPPER_NA: 10,10,10,10

The number of acceleration and deceleration steps to be used. The higher this number, the smoother the movement will be. Values are given for X,Y,Z,R axis.

STEPPER_FLAGS: c,c,c,c

A mask value in hexadecimal that configures each stepper motor.

- Bit0: motor has a home switch
- Bit1: homeswitch is not an endswitch
- Bit2: motor stops when interlock is open
- Bit3: motor stops when shutter is open
- Bit4: inverts the direction hardware signal
- Bit5: inverts the software direction

Values are given for X,Y,Z,R axis.

STEPPER_COUNTSMM: 333,333,333,333

The number of steps of the stepper motor per 1 mm distance. Values are given for X,Y,Z,R axis.

STEPPER_OFFSET: 0,0,0,0

Defines an offset for each axis. An arbitrary offset can be chosen for each axis which simply changes the logical Zero-position of the system. Values are given for X,Y,Z,R axis.

STEPPER_DELAY: 0

Defines a delay for the X/Y axis (when the dynamic mode is in 'Stepper mode' or 'Stepper mode XY') in microseconds. The delay is applied after a movement has completed.

STEPPER_SPT: 1600

The steps per turn when the first axis is used as a rotational axis (dynamic mode is 'Stepper mode' and a cylinder-diameter is configured).

STEPPER_ZJOGGING: 0

A hexadecimal value that defines the input signal for positive/negative jogging mode of the z axis.

Value: 000000AB where the value A defines the negative jogging mode and B the positive mode.

The value of A/B defines which input signal is used for the jogging mode. Possible values are 0(disabled), 1, 2, 3, ….c, d, e, f. The value '1' stands for input0, '2' for input1, and so on.

Example: ba Input10 and input 9 are used for z-jogging in negative/positive direction.

STEPPER_YANGLE: 0.0

Defines an angle of the stepper motor's y-axis. The units are given in [mm/m], which corresponds to the tan(alpha)/1000.

STEPPER_RDELAY: 0

Defines a delay for the R axis (when the dynamic mode is in 'Stepper mode') in microseconds. The delay is applied after a movement has completed.

MOPAPORT: 0

The 'mopaport' is only available for a special type of fiber laser (MOPA) and for the 'Optowave' UV laser, which is a 'YAG-type'. In both cases it defines the internal serial port of the system that connects to the laser's controller. This is only available for DSP scannercards. The controlport number depends on the slot of the USB-RS232 converter that is internally attached to the controler card and usually is port number 2.

CHANNELMASK0: 0

Diodearray version only: A mask value in hexadecimal that configures the channels 0-29 of the diodearray. Bit0...Bit29 corresponds to channel 0...29. When a bit is set then the channel is assumed to be an active (used) channel and the system tests the 'ready-state' of this channel.

CHANNELMASK1: 0

Diodearray version only: A mask value in hexadecimal that configures the channels 30 - 59 of the diodearray. Bit0...Bit29 corresponds to channel 30...59. When a bit is set then the channel is assumed to be an active (used) channel and the system tests the 'ready-state' of this channel.