

Function (v2.54)	RAYGUIDE	CLICK & TEACH	MATCH
Device configuration			
Unlimited number of controller cards (with auto-connect option)	0	0	0
Master-Slave Mode selectable (2-times SL2 or 2-times RL3 protocol)	0	0	0
Configure unlimited number of devices (per type) and activate them only by link to controller card	0	0	0
Import / Export of device configuration	0	0	0
Laser diagnostic feature	0	0	0
Control Card			
Assignment of connected laser source and deflection unit and communication protocol	0	0	0
Configuration of IO-ports and dedicated signals (e. g. Mark-in-Progress)	0	0	0
Watch actual status of IO-bits	0	0	0
Deflection Unit			
Automatic setting of tracking error values	0	0	0
Rotation, flipping of coordinate axis	0	0	0
Load up to 4 correction files per deflection unit	0	0	0
Field calibration (scale, offset, rotation) and bias for any z-axis	0	0	0
Focus finder tool	0	0	0
Direct access to Multi-Point Editor for XY and Z-calibration	0	0	0
Status display	0	0	0
Automated status- and condition-monitoring	0	0	0
Laser types			
Generic Laser (analog, CO2)	0	0	0
IPG: YLPN, YLPN APD-Mode, YLPS AMB	0	0	0
nLight: AFX, CFX, CLF, SFX	0	0	0
Trumpf: TruPulseNano	0	0	0
Coherent: Highlight ARM	0	0	0
Lumentum: Pico Blade 3	0	0	0
Innolas Nanio AIR / BLIZZ	0	0	0
Laser specific settings			
Power control: analog (2 channels possible), digital, PWM,	0	0	0
Visible pointer option	0	0	0
Power unit in Watt or Percent	0	0	0
Time behavior: CW, pulsed, selectable	0	0	0
Individual timing-adaptation	0	0	0
First pulse suppression	0	0	0
Tickle puls	0	0	0
Laser calibration file	0	0	0
Position dependent power scaling	0	0	0
GUI Options			
Languages: English, German, Chinese, French, Spanish, Italian, Japanese	0	0	0
Show / Hide several GUI elements	0	0	0
Flexible arrangement of GUI panels	0	0	0
Quick switch to simplified GUI appearance	0	0	0
Quick switch to touch GUI	0	0	0
Switch between 2-dimensional or 3-dimensional coordinate display	0	0	0
Free definition of displayed decimal places	0	0	0
Viewport options			
Unlimited number of jobs to be open at the same time	0	0	0
Enable / disable display of: grid, jump vectors, vector tips, highlighting sharp corners	0	0	0
Zoom: in / out, to workspace, to selected object, dragged area	0	0	0
Top View (XY), Side views (XZ) / (YZ) and 3D rendering view when using a 3D correction file	0	0	0
Display of cursor position	0	0	0
stroke thickness of drawing adjustable	0	0	0
Viewport tools			
Knife: Geometries can be freely cut into two objects along a line	0	0	0
Ruler: Measure distances between two points which can be defined by mouse	0	0	0
Center selected object	0	0	0
User administration			
Local user or or based on operating system users	0	0	0
Define various user roles	0	0	0
Assignment of activities to user roles (with restriction to read-only access if no authorization)	0	0	0
Automatic logout of admin user by timeout	0	0	0
Adding graphic objects to job			
Drag objects directly into tree or viewport	0	0	0
Draw object using mouse cursor	0	0	0
Simple graphic objects			
Line	0	0	0
Square	0	0	0
Polygon	0	0	0
Circle	0	0	0
Ellipse	0	0	0
Spiral (regular or squared shape)	0	0	0

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Fill-Styles			
Hatching	0	0	0
Inset	0	0	0
Spiral	0	0	0
Drill points	0	0	0
Bitmap lines	0	0	0
Vector Graphic	0	0	0
Drill-Array for code-cells	0	0	0
Circle-Array for code-cells	0	0	0
Fill settings			
Invert	0	0	0
Sort	0	0	0
Defined number of inset fill-lines	0	0	0
Padding	0	0	0
Angle	0	0	0
Change of fill angle / offset per pass	0	0	0
Cross-hatch	0	0	0
Uni-directional vs bi-directional	0	0	0
Complex graphic objects			
Drill or drill-array (with import function for coordinates or direct matrix-array)	0	0	0
Text (various options for automated content generation) radial, vertical orientation	0	0	0
Barcodes (huge number of codes-types and various options for automated content generation)	0	0	0
Vector graphics (import of DXF, PLT, SVG and many more formats)	0	0	0
Dynamic vector graphic (File does get reloaded by each job execution)	0	0	0
Bitmaps	0	0	0
3D Objects			
Solid (STL-File) for deep engraving, slice viewer for all focus levels	0	0	0
Helix	0	0	0
Extruded vector graphic for deep cutting (several z-layer with shifting of start / end point)	0	0	0
Bitmap marking			
File Import of JPG, BMP, EXIF, GIF, PNG, JPEG	0	0	0
Point&Shoot or Sprint-Mode	0	0	0
Horizontal or vertical line processing	0	0	0
Editable assignment of power to gray value	0	0	0
Optimize process time by trimming bitmap-lines	0	0	0
Properties of marking objects			
Pen assignment	0	0	0
Execution mode: only outline, only filling, contour > filling, filling > contour, don't execute	0	0	0
Binning (execution depends on input signal pattern)	0	0	0
Passes: number or infinite (no interrupt of power at closed paths)	0	0	0
Sequences: List with number of passes with different pens	0	0	0
Pass assignment per object / layer / path	0	0	0
Object related statistic	0	0	0
Automation objects			
Wait on Start-Trigger	0	0	0
Wait on Signal-pattern	0	0	0
Delay	0	0	0
Pop-Up-Dialog	0	0	0
Write Port	0	0	0
Arm / disarm Laser	0	0	0
Send enhanced command (change of tuning)	0	0	0
Write to serial port	0	0	0
Set correction file index	0	0	0
Container (collective treatment of several objects)			
Group	0	0	0
Matrix-Copy (multiply in fix XYZ-array)	0	0	0
Polar-Copy (multiply along the circumference)	0	0	0
Cluster-Copy (multiply with flexible pattern), import of pattern coordinates	0	0	0
z-Shifter (multiply in focus direction for simple deep engraving)	0	0	0
Segmentation (tiling of oversized layouts)	0	0	0
Automatic vector optimization			
Sort (optimize order to reduce jumps / sort by belt-direction)	0	0	0
Close paths	0	0	0
Close gaps	0	0	0
Invert direction	0	0	0
Set all z-coordinates to zero	0	0	0
Set as path start	0	0	0
Combine (e.g. layers)	0	0	0
Remove (empty paths, duplicates)	0	0	0
Replace (e.g Arc to Polyline, Polyline to drill-chain)	0	0	0
Double Points in Polyline	0	0	0
Manual vector editing			
Combine / split objects	0	0	0
Define common parameters (e.g. laser on time of multiple drills)	0	0	0
Manuel point editing (by mouse, arrow-keys, discrete transformation)	0	0	0
Define any point as path-start	0	0	0
Convert filling to layer with vectors	0	0	0
Generation of 3D vector graphics (Projection of 2D vector graphic onto 3D surface from STL file)	0	0	0

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Object transformation			
Offset, rotation, scale / size	0	0	0
Absolut vs relative transformation	0	0	0
Transform in all 3-dimension	0	0	0
Selection: object / layer / path / thumb / also multiselection possible	0	0	0
Apply to copy	0	0	0
Position object by absolute coordinate of single contour-point	0	0	0
Job tree			
Overview of Job settings plus device overview with status indication	0	0	0
List of all job elements	0	0	0
Delete, copy, paste objects	0	0	0
Convert any vector based object into vector graphic object	0	0	0
Edit object order by drag & drop or push/pull them into / out of container	0	0	0
Tool-Tip showing important object properties	0	0	0
Unify pens	0	0	0
Export vector graphic to DXF	0	0	0
Project on 3D surface (Creates a 3D vector graphic from a 2D vector graphic by projecting it onto the 3D surfaces of an STL file)	0	0	0
Line alienation (periodic patterns along the contour, similar to wobble), some can be combined with power modulation	0	0	0
"Flatten" (all become one vector graphic) or "explode" (generates n-elements) container	0	0	0
Job options			
Definition of job-presets (preset defines scan field arrangements and workspace, default optimizations)	0	0	0
Assignment of job to scan controller(s)	0	0	0
Assignment of pen set	0	0	0
Job looping (fix number of infinite)	0	0	0
Embed background image	0	0	0
Several automated optimisations on job execution can be activated	0	0	0
Definition of variables (variables can be defined in job flow and used e.g. in text / barcodes)	0	0	0
Job statistic with information about process time	0	0	0
Object placement			
Center layout	0	0	0
Magnetic guidelines in workspace	0	0	0
Align objects relative to each other	0	0	0
Placement of object by coordinate of single object-point	0	0	0
Pick-to-fit (position and size get adjusted by background image)	0	0	0
Pen usage			
Most granular assignment of pens to layout (on object-, layer-, path-level)	0	0	0
Creation of pen libraries	0	0	0
Unlimited number of pens per pen-set	0	0	0
Copy & paste of pens from one pen-set to another	0	0	0
Optional usage of object pens, which "belong" only to an object, not the job	0	0	0
Edit individual parameters when selecting multiple pens	0	0	0
User defined parameter table view	0	0	0
Export of the job parameter table to CSV-format for application reports	0	0	0
Display which pens are used by which objects	0	0	0
Specific pen parameter			
Activation of velocity dependent power control	0	0	0
Pulse shape	0	0	0
Calculation of the max. marking speed based on the correction file and the max. deflection speed	0	0	0
Wobble-figures: circle, sine, lying eight, Lissajoux. Display of defined wobble shape.	0	0	0
Definition of dashed-line	0	0	0
Power ramps (start- / end-ramp) with multiple slopes, distance or time based (also for 2 analog power targets)	0	0	0
Two skywriting-modes : angle dependend or "force at start / ends"	0	0	0
Laser dependent parameters: optical pulsewidth, beam-profile, pulse-profile, Simmer current	0	0	0
Spot magnification when using suitable correction files (e.g. for AM-MODULE)	0	0	0
Pen parameter finder to create parameter matrix			
Laser: power, secondary power, frequency, pulsewidth; on-/off-delay	0	0	0
Deflection unit: mark speed, jump speed	0	0	0
Delays: mark delay, jump delay, poly delay	0	0	0
Skywriting: extension time	0	0	0
Flexible number of rows / columns and distances	0	0	0
Use of job geometry	0	0	0
Management of multiple scan fields			
Individual fields (n-single fields with simultaneous execution of same job = master-master mode)	0	0	0
Unified field (several scan fields from a common workspace)	0	0	0
Intersected field (overlapping area created by the arrangement of several scan fields)	0	0	0
Load balancing of paths located in intersected area	0	0	0

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Job execution modes			
OnHost (directly from GUI)	0	0	0
OnCard (job is loaded onto card for direct response to IO signal before execution, especially recommended)	0	0	0
Quick-Run (execution of individual objects for application trails, automation get ignored)	0	0	0
Selection of all open jobs or only active job or job list with IO control to execute	0	0	0
Joblist (Definion of list of jobs, excuted by evaluation of IO-condition)	0	0	0
Controlled termination of endless loop of a job execution	0	0	0
Control by keyboard shortcuts	0	0	0
Preview with pointer			
Selection of preview geometry: all, contour, enclosing rectangle, contour point	0	0	0
Possibility to edit the layout while the preview is running	0	0	0
Processing of oversized layouts			
Tiler container allows processing of layouts which exceed the size of scanfield by processing a series of tiles	0	0	0
order of tiles can be user-defined, empty tiles get skipped	0	0	0
Marking-on-the-fly (MOTF)			
Virtual scan field (allows marking objects to be placed outside the scan field along the belt direction)	0	0	0
Triggering via part sensor, distance or equidistant repetitions	0	0	0
Automatic sorting of the object sequence in belt direction	0	0	0
Splitting of oversized geometries by belt distance or time to fit into the field	0	0	0
MOTF parameter finder (automatically determines ideal values for splitting large geometries)	0	0	0
Grouping of paths that are close together in the belt direction to reduce reset-jumps	0	0	0
Endless MOTF			
Job allows single jobelement (with continues contour-line, but also interrupted by jumps)	0	0	0
Endloss looping or defined number of repitions	0	0	0
Can use part sensor as trigger	0	0	0
Display of "folded" job geometry	0	0	0
Direct access to MOTF settings of scan controller			
Configuration of encoder and belt direction	0	0	0
MOTF simulation encoder for evaluation without real encoder	0	0	0
Debouncing und suppression of part sensor possible	0	0	0
Use of second encoder (compensation of movements 90° to belt direction or in z-direction)	0	0	0
Job analysis			
Display of job statistics with execution time	0	0	0
View options allow insight into layout- and process-sequence	0	0	0
2.5D and 3D processing with FOCUSHTER and AXIALSCAN-(FIBER)-Series			
Deep engraving: Import and slicing of 3D solid provided by STL files	0	0	0
z-shift container: repeat layouts in several focus positions	0	0	0
Extruded vector graphic: repeat layouts in several focus positions while shifting start- / end-position	0	0	0
Import of 3D vector graphics or 3D coordinate-table	0	0	0
Mapping of 2D vector layout (including filling) onto 3D surface (STL file) to generate 3D vectors	0	0	0
2D layout can be rotated into space (marking on inclined plane)	0	0	0
Use of correction files that have an integrated 3D surface by means of Multi-Point-Editor software	0	0	0
Automated communication of system faults			
Possible faults: laser alarm, deflection unit status failed, scan controller, abort signal, out-of-field	0	0	0
If used, also errors from plug-ins as image proessing (MATCH) or distance measurement (RAYDIME METER)			0
Communication via IO signals or serial interface	0	0	0
Setup of the stand-alone operation mode of scan controller			
Load several laser process jobs onto the control card in one step and define their execution conditions	0	0	0
Support of CSV-file import / export for quick assignment / updating of job lists	0	0	0
Timestamp for quick identification of the up-to-dateness of jobs that have already been uploaded	0	0	0
Definition of the reaction in the event of an error or abort, including return to the start of the list	0	0	0
Configuration can be saved and cloned to other cards	0	0	0

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Optional enhancements via plug-ins			
Remote connection via TCP/IP interface			
Direct control of RAYGUIDE functions from PLC	O	O	O
Remote server allows control without the GUI being open	O	O	O
Possibility to subscribe to (error-) events in order to react on these accordingly	O	O	O
Provide code / text content, object or job transformation, changing process parameters	O	O	O
Control job selection	O	O	O
Pause job to wait for command	O	O	O
Adjustment of the focus position for focus drift compensation	O	O	O
Transfer a process-transformation-queue for the timed application of the transformation	O	O	O
Solar-Wafer			
Special import functions and automated line adjustment feature for xBC technology	O	O	O
Electrode-tab designer			
Direct generation of typical cutting geometries of electrode tabs	O	O	O
Direct generation of typical cutting geometries for tableless notching	O	O	O
Incrementing parameters (e.g. pitch, height,...)	O	O	O
Optimisation for endless MOTF (to reduce movenot in marking position)	O	O	O
Optional: Add special cut geometry to shred offcut	O	O	O
Log-Importer			
Review layout of logged vectors as transmitted to the control card	O	O	O
RAYDIME METER (only when working with AS-FIBER)			
Configuration and calibration of OCT unit	O	O	O
Measurement container with single or collective measurement per child	O	O	O
Measurement container combined with cluster-copy container (sequential workflow)	O	O	O
Measurement container combined with matrix-copy container (alternating workflow)	O	O	O
Option to compensate for parallax errors of upstream image processing	O	O	O
Line profiler (distance measurements along a defined line)	O	O	O
Log file of measurement results	O	O	O
Miscellaneous			
Import / export of system settings (for backing up / restoring your system-specific RAYGUIDE settings)	O	O	O
Job encryption	O	O	O
GUI multitasking (e.g. change/create a second job while another job is running)	O	O	O
Emulated scan controller allows the creation of RAYGUIDE jobs without a real scan controller > Office version)	O	O	O
Help-function with shortcut to the manual	O	O	O
Support function (automated collection of all support relevant data)	O	O	O
Several log files for fast trouble shooting	O	O	O
Programable interfaces			
Software-development-kit (SDK): Use only features you need in your application by direct function calls	O	O	O
Embedded GUI: Embed the RAYGUIDE GUI or parts of GUI in your machine HMI	O	O	O
Add-on feature: RAYGUIDE CLICK & TEACH			
Calibration of camera using marked calibration jobs		O	O
Optional use of HW-Trigger			
Embedded illumination control		O	O
Several image acquisition options for background images (background images are used to adjust contour design)		O	O
Live-image with preview function to check taught in contour		O	O
Automation object to acquire image in job (e.g. images of process results) and optional embedding of job geometry		O	O
Automation object for illumination control		O	O
Add-on feature: RAYGUIDE MATCH (position detection with image processing)			
Embed image processing job as automation object in RAYGUIDE job flow			O
Image acquisition element (definition of region-of-interest incl. option to set illumination or camera parameters)			O
Several digital filter: blur, threshold, morphological operations and many more			O
Daisy-chain of filters possible			O
Several searches: circles, lines, corners, templates, Blob, grey value transitions			O
Parameter variation (increases robustness by renewed search with varying parameters)			O
Result processing (teach-in reference-position, determination and validation of process transformation)			O
Result processing with relative position validation			O
Multi-Position detection (Image processing operates alternating inside a copy-container)			O
Report of error events to remote interface client			O
Can also work with imported images			O
Export of images for quality control or troubleshooting			O
Llog file of measurement results			O