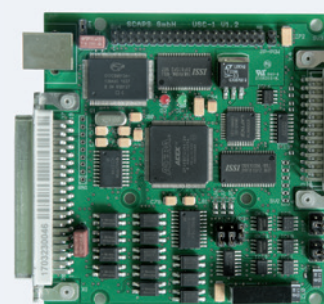
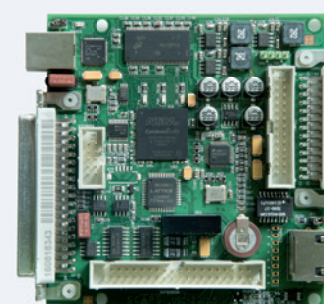
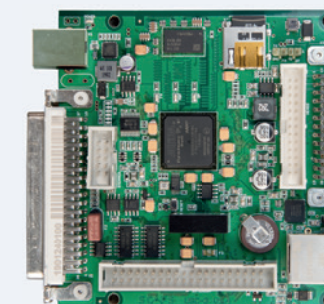


USC Cards

USC-1, USC-2 and USC-3 - the USB Scanner Controllers

The USC cards are SAM compatible hardware modules for driving a 2- or 3-axis laser scanner system. Due to their compact size of 95 x 100 mm and I/O capabilities, the USC cards are easy to integrate and allow to control a complete machinery via a single communication line. All USC cards calculate the laser and scanner signals in real time. With the Flash mode (optional), flexible embedded solutions can be implemented. Short execution cycle times make the USC cards perfectly suitable for high performance applications. Every USC card supports almost all types of lasers and scan heads.

		
USC-1	USC-2	USC-3

Power			
5 V, 1.6 A	✓	✓	✓
Connection			
USB 2.0	✓	✓	✓
Ethernet	–	100 Mbit/s	1000 Mbit/s
Laser Control			
8 bit digital port	1	1	1
opto-insulated outputs	3	3	3
analog outputs, 2.5 V – 10 V	2 x 8 bit resolution	2 x 12 bit resolution	2 x 12 bit resolution
max. laser frequency	2 MHz	2 MHz	4 MHz
hardware bitmap marking	–	up to 800 kHz	up to 800 kHz
Scanner Control			
XY2-100 interface	✓	✓	✓
XY-SCAPS interface	–	–	✓
Headz	–	✓	✓
External Control			
RS-232 interface	✓	✓	✓
MOTF channels	1	2	2
opto-insulated inputs/outputs	6/6	6/6	6/6
digi-inputs/outputs (TTL)	–	10/10	10/10
integrated stepper controller	–	✓	✓
analog inputs, 0 V – 10 V	–	2	2
Standalone (Flash)			
memory	–	1 GB flash	4 GB microSD
RAM	–	64 MB DDR	256 MB DDR3
CPU	–	dual-core embedded	dual-core ARM

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SAMLight

USC

SCAPS

Product Overview

Our hardware and software product range covers all features for various kinds of scanner applications.

SAM is our powerful programming library.

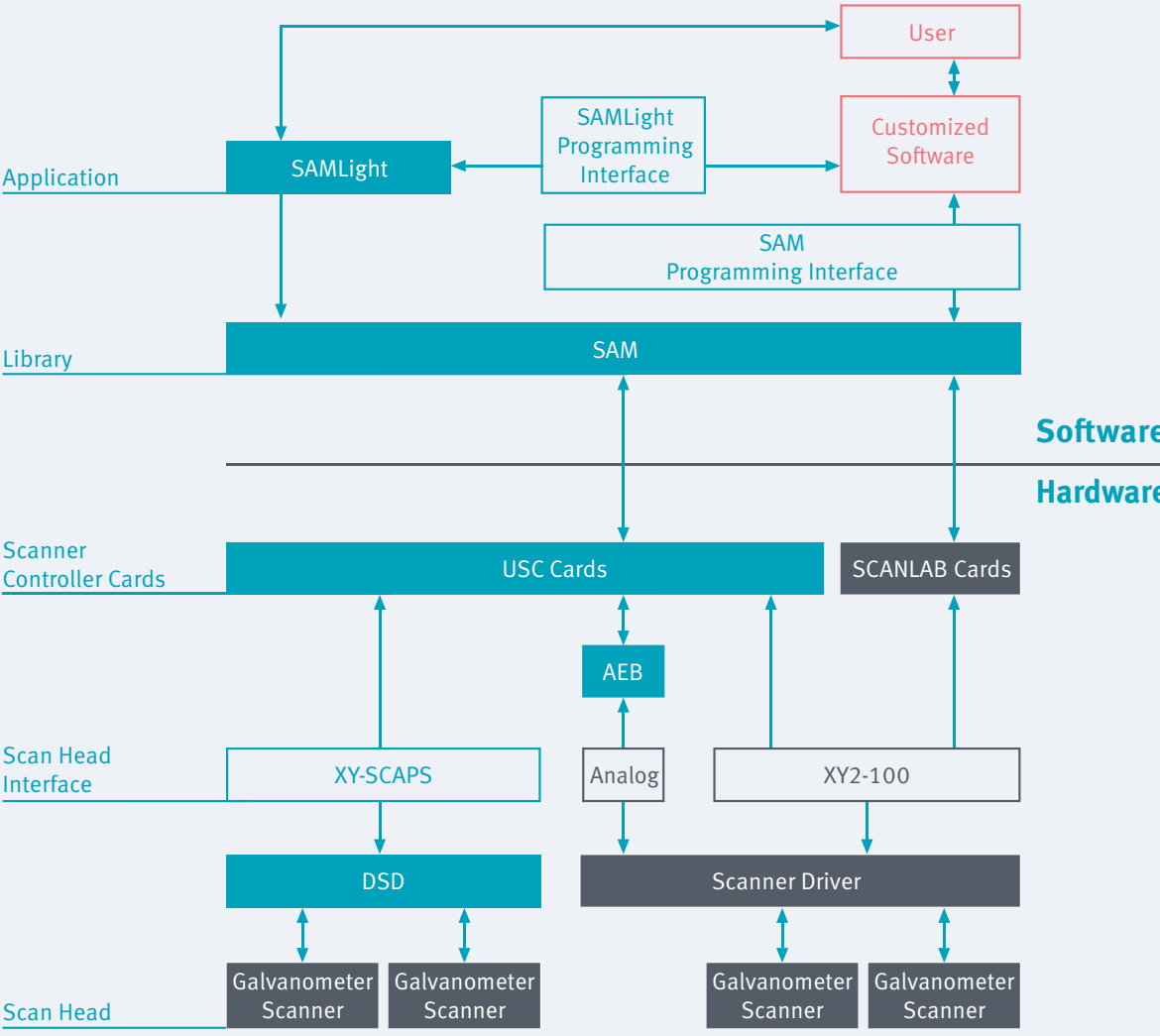
The laser marking software SAMLight provides the functionality for many industrial applications as well as for job shops.

Different software and hardware options are available for enhanced solutions.

The USB Scanner Controllers USC-1, USC-2 and USC-3 are SAM compatible hardware modules to drive a 2- or 3-axis laser scanner system.

Flash option for building flexible and fast standalone systems is available.

The Digital Servo Driver DSD can be used for realizing highly integrated and powerful scanning solutions.



Interfaces

Different programming interfaces are available as tool kits to build individual customized software.

SAMLight

SAMLight provides the functionality for many industrial applications as well as for job shops.

Options

Various software and hardware options are available for specialized solutions.

Programming Options

We offer different programming interfaces. These allow building individual customized software according to the specific needs of each customer by using common programming tools on Windows. Platform independent control is possible when using the Flash Control Interface (FCI). Sample applications written in different programming languages are available. These applications can be used as a starting point for customizing the software.

```
m_client.ScLoadJob("testjob.sjf", 1, 1, 1);
m_client.ScChangeTextByName("textfield", "Hello World");
m_client.ScMarkEntityByName("textfield");
```

Client Control Interface (CCI) program commands

Flash Control Interface (FCI)

The FCI allows operating the USC-2/3 card in standalone mode without a PC. This mode offers optimized performance and automatization even in MOTF applications with the following features: job setup with SAMLight or via G-Code; job upload via Ethernet, USB or FTP; use of dynamic entities (e.g. date/time, serial numbers, barcodes, text strings); job selection via FCI or by hardware input; bitmap marking with real-time exchange via FTP; redpointer control; dynamic 3D marking with USC-3.

Client Control Interface (CCI)

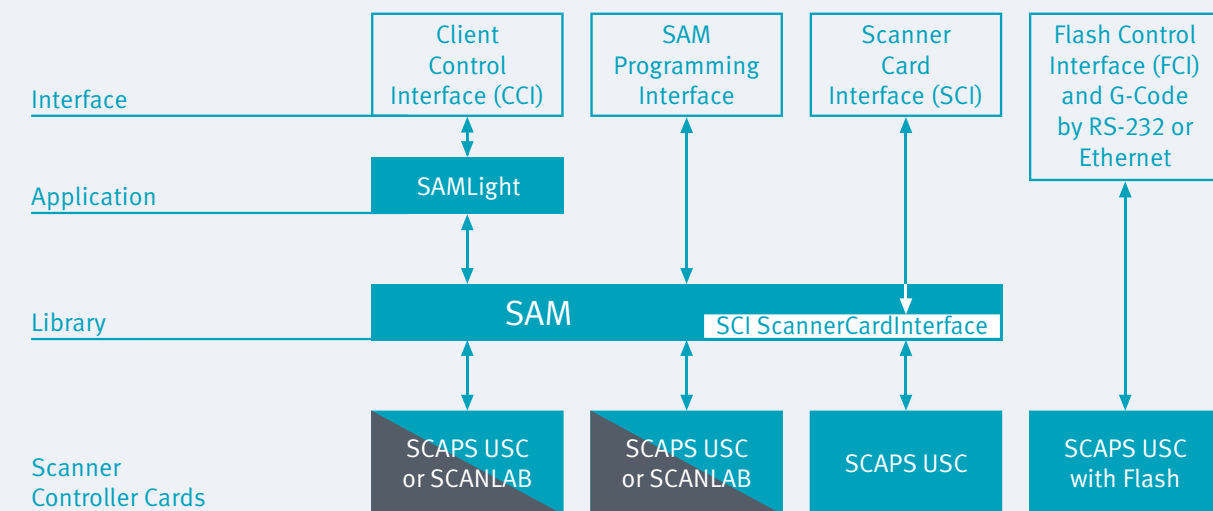
The CCI provides function commands to remote control SAMLight from another software. This allows fast development of automation with different Windows development environments (OCX or COM encapsulation) or even Windows-independent using plain text commands (via TCP).

Scanner Card Interface (SCI)

SCI is a SAM subset that offers access to the functionality of the USC cards through a low level interface. It is well suited for the customized realization of basic applications.

SAM Programming Interface

The SAM library was introduced in the market in 1998 as an ActiveX and COM based component set offering functionality for all kind of scanner applications. The functionality grew with the requirements of many OEM customers worldwide. Very basic as well as very powerful functions are included.



Products for Programmers

The Laser Marking Software

User Interface

- operates on MS Windows 11, 10, 8, 7
- English and German version available, customizable translation possible
- customizable installer and GUI
- password protected user levels
- easily accessible debug / backup tool
- Job editor for easy job setup

File Formats

- SCAPS Job Format (SJF) with fast preview capabilities
- many bitmap and vector import and export formats (bmp, png, jpg, plt, dxf, ai, svg, cnc, txt, etc.)

Automation

- different control objects (wait, timer, I/Os etc.)
- remote control via Ethernet or direct program calls (CCI)
- special sequence jobs (pre / post mark processing etc.)
- counter mode
- JobIOSelect mode

Optic

- variable adjustment of laser and scanner parameters
- scanner movement preview
- laser power save and shutter control
- background camera integration

Pens

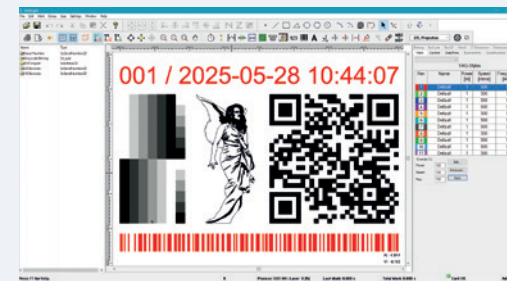
- advanced wobble shapes following marking direction (USC-3)
- point to geometry mode for drilling
- power and speed ramping
- Skywriting for optimized marking result at vector ends
- combination of pens and hatches to styles
- ParameterFinder for easy optimization of pen and hatch parameters

Hatcher

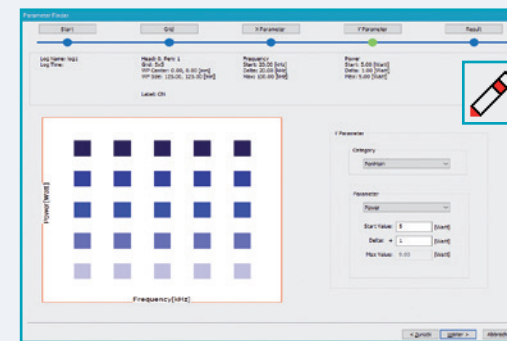
- 10 hatches, each loopable with angle
- filling of areas with various styles
- beam compensation of contour lines

Barcode

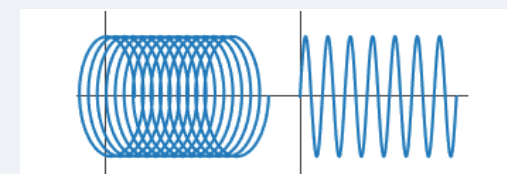
- generation of different 1D and 2D barcodes (EAN 128, Code 128, DataMatrix, QR etc.)
- DataMatrix dot generation
- QR code with logo



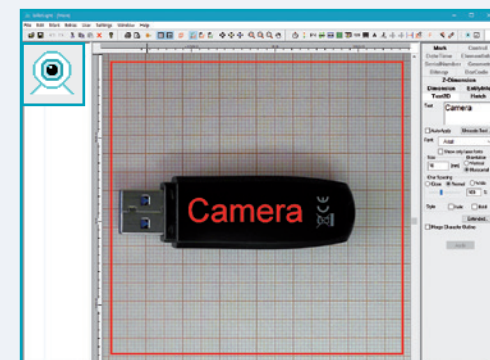
User Interface



ParameterFinder Wizard



Wobble: Ellipse and Sine Shape



Background Camera



Barcodes

Serial Numbers and Date / Time Objects

- customized serial number objects
- customized date/time objects
- file serialization (csv, txt, xls, xlsx, xlsx)
- time shift, year, month and day mapping

Text and Fonts

- fast font preview
- radial text
- ttf, otf and laser fonts
- font editor for defining customized laser fonts

Bitmaps

- b&w and grayscale bitmaps
- improved and easy bitmap handling
- automatic exchange of bitmaps in job
- conversion of vector to bitmap

Motion Control

- for driving up to 6 axes
- direct motion control and job control objects
- homing procedure

Flash Compatible Mode

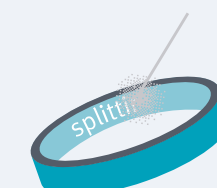
- check of settings and jobs
- assistance through supported objects and features

Sc_corr_table

- edit USC Correction File (UCF) which compensates scan head specific optical distortions
- convert correction file formats into UCF
- create and improve UCF

Splitting

- splitting of objects which are larger than the working area
- automatic movement of mechanical axes between split parts
- 1D or 2D planar splitting
- angular or Ring splitting for marking on round objects
- bitmap splitting
- fixed size splitting
- entity based splitting
- character based splitting



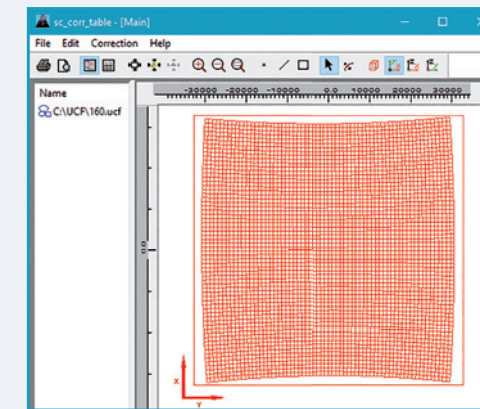
Ring Splitting



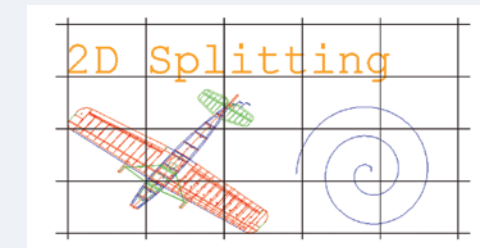
splitting



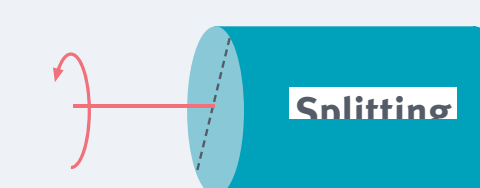
Grayscale Scanner Bitmap



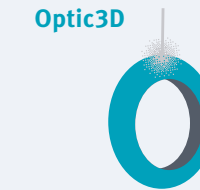
User Interface of Sc_corr_table



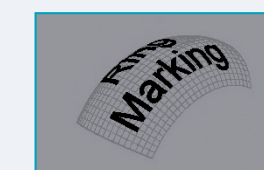
2D Planar Splitting



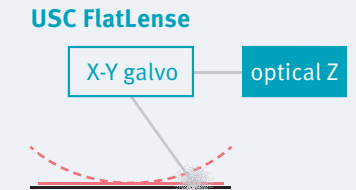
Angular Splitting on a Cylinder



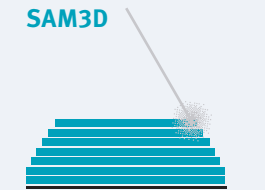
Marking of 3D vectors is possible with a 3D scan head. Data for marking is either imported or bend / projected on 3D surfaces.



Optic3D



Field Flattening is possible with a 3D scan head. No F-Theta lens is necessary.

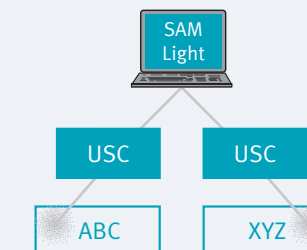


3D import data is sliced into 2D layers for 2 1/2 D marking. Typical applications are deep engraving or rapid prototyping realized with a 3D scan head or a mechanical Z-axis.



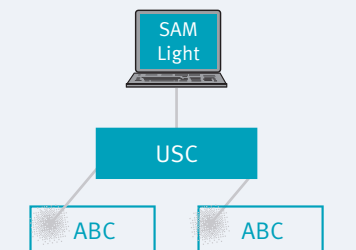
SAM3D Data Flow

Multi Card



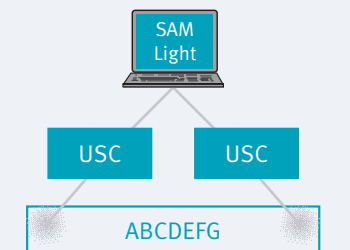
MultiCard is a Flash feature for the control of up to 16 USC cards. Each card operates independently in standalone mode.

Head2



Head2 enables the second scan head connector. One card controls two synchronized scanners and one laser.

MultiHead



MultiHead allows simultaneous marking of a single SAMLIGHT job on up to six heads. Each head processes independent data.

MOTF

Each USC card can compensate scanner signals for moving targets (planar or angular direction) based on real or simulated encoder signals. Jobs larger than the working area are splitted, endless looping is available. Best MOTF marking performance is available in Flash.

