

Control and Versatility

The RTC5 **control board** provides synchronous, interference-resistant control of scan systems, lasers and peripheral equipment in real time. It is available as a PC interface board, or as a PCI-Express board.

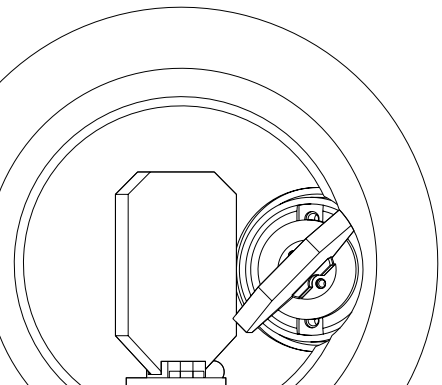
A high-performance signal processor and the supplied DLL simplify programming under Windows. Software commands are loaded into the RTC5's freely-configurable list buffer and processed by the DSP. Every 10 µs, appropriate signals are output to or read-out from the scan system, laser and peripheral equipment.

The RTC5 communicates with scan systems via the new SL2-100 data transfer protocol. This protocol supports 20-bit control signals and thereby a 16x higher positioning resolution compared to the RTC4 predecessor board. The RTC5's processor automatically performs micro-vectorization and image field correction.

For laser control, various programmable laser signals are available for vector and bitmap processing. During execution, the board can provide automatic position/speed/vector-dependent readjustment of laser power. Furthermore, the scan system can be synchronized to the laser. This "output synchronization" is a prerequisite for exact and reproducible laser processing when the laser-pulse signal is defined by a fixed (external) laser clock, as is the case for ultrashort pulse lasers.

For SCANLAB scan systems with fully digital servo electronics (e.g. intelli*SCAN*, intelli*cube*, intelli*DRILL*, intelli*WELD*, power*SCAN* i), the RTC5 also supports all possibilities arising from the i*DRIVE* technology. This includes real-time monitoring and remote diagnosis of key operational parameters, simulation-assisted process optimization and the use of different dynamics tunings. The feedback of the scan-system speed can be used for speed-dependent laser control.

Numerous options provide the extensive flexibility system integrators need for meeting diverse customer requirements.



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System Integration

- PCI bus interface or PCI-Express interface (PCIe-x1 version 1.0)
- Any number of RTC5 PCI or PCIe boards in one PC
- Master/slave synchronization
- Driver for Windows 10 (x64)
  Legacy driver for previous Windows versions
- Multi threading, multi processing

Scan System Control

- SL2-100 transfer protocol (control of scan systems per XY2-100 transfer protocol via an optional converter)
- 20-bit positioning resolution
- Virtual processing field (24 bit)
- 10 µs output period
- Galvanically isolated signals
- Tuning selection
- Vector and jump mode, tuning auto-switching
- Scan-system diagnosis
- Reading back actual-position values
- Synchronization of scanning motions to the laser clock (e.g. ultrashort pulse lasers) – "output synchronization"

Laser Control

- 15-pin D-Sub connector
- Laser signals with 15 ns resolution and 20 mA output current
- Various laser modes for controlling all typical lasers
- Bitmap mode with pixel frequencies up to 300 kHz, 15 ns resolution, 0-100% laser pulse width
- RS232 interface
- Speed- and position-dependent laser control

Control of Peripheral Equipment

- 16-bit digital output and input
- 8-bit digital output
- 2-bit digital output and input
- 12-bit analog output (0...10 V)
- McBSP interface
- Stepper motor signals

Command Management

- Configurable list buffers with 1,000,000 list positions, protected memory area definable
- Lists and subroutines
- "Short" list commands for changing (laser) output signals without interrupting polygonal traversal (the laser remains on)
- Download verification
- Enhanced list and list execution status
- Definable and selectable character sets
- Marking of dates, times and serial numbers
- Marking of circles and ellipses
- Sky writing
- Conditioning of all list commands possible

Options

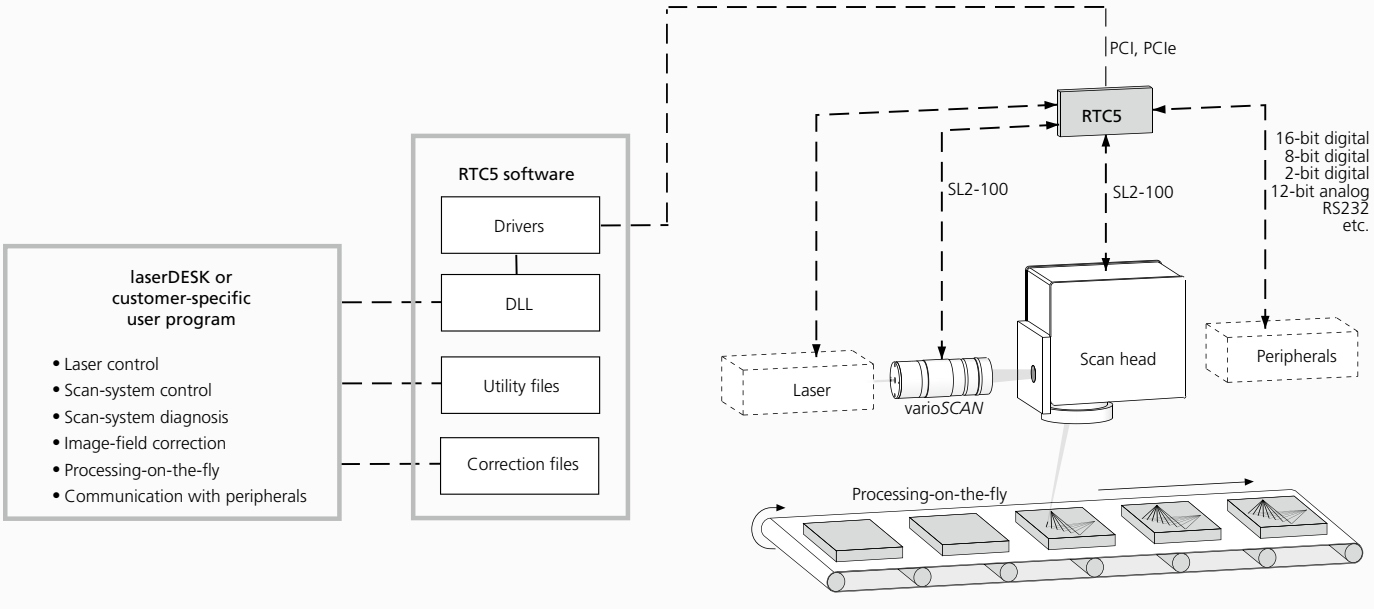
- Control of 3-axis scan systems
- Processing-on-the-fly functionality for objects in motion (two encoder inputs with 32-bit counter, up to 8 objects between trigger and marking position, etc.)
- Dual-head capability for simultaneous control of two scan systems
- Customer-specific extensions possible

Other RTC control boards

- RTC4 (PCIe, Ethernet)
- RTC6 (PCIe, Ethernet, EtherBox)

Accessories

- laserDESK laser processing software



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Product photos are non-binding and may show customized features.

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