Modulo Line

Automated lens processing, intelligently combined
Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line.

Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient. The result is an unprecedented level of equipment utilization in lens production and unmatched throughput. Designed for utmost flexibility, the unique arrangement and plug-and-play connection allows for the addition of new modules in any order, with minimal disruption.

The Modulo Control Center seamlessly interacts with the intelligent machines and provides centralized production control. At just a glance, the smart dashboard presents the lab manager with all the key information and functions to run the lab at highest efficiency.

The Modulo Line guarantees significant cost and time savings as well as maximum equipment utilization.

Plug-and-play value
Modulo is a series of interlinked machines that creates a highly integrated system for lens production. Designed for utmost simplicity, the machines are easily integrated into the system with plug-and-play. Thereby the system reduces the cost and complexity of traditional lab planning and the time to market. Ultimately the system allows multiple ways to integrate and grow production lines – easily expanding production capability according to individual needs.

Controlling the flow
The intelligent machine software independently controls the production flow. The conveyor becomes an integral part of the machine in contrast to an external driven add-on of previous machine generations. Once a module is linked-in, the system ensures optimal utilization of the machine in a perfectly balanced production flow. Now, integration of full production lines becomes as easy as can be.

Handling all situations
The Modulo Line is a very compact and smart processing platform. Its intelligent crosslinking of machines guarantees that your production keeps going in case of an unintended stop of a single processing unit. This reduces the need for maintenance capacity and keeps the yields up.

Modulo growth roadmap
Plug-and-play simplicity provides value to all Modulo customers. The portfolio of Modulo machines will expand in the range of processing steps and performance data with the mission to meet upcoming demands. Every Modulo machine is a ticket into the future.
SPP modulo
Automated lens protection, intelligently combined
**SPP Modulo**

The fully automated spin protection system, SPP Modulo, optimally protects lenses during surfacing utilizing UV-curable liquid protection layers. Problems with wrinkles, bubbles or detaching, commonly known with current taping solutions, are a thing of the past. Ideal preconditions for autoblocking.

The smart automation system handles eight lenses at a time, swiftly transferring them from station to station. While two lenses are covered with the thin film lacquer protection layer, another two are already being cured using UV light at the next station. At the same time, the next two lenses are loaded and another two are transferred back to the job tray.

The UV-curable protection layer is evenly distributed across the lens optimally covering it while adhering tightly to it — even with extremely curved lenses or extreme flat top bifocals. Bubbles or wrinkles are prevented that often result in power or cosmetic defects.

One filling of the lacquer tank lasts all shift long and can be refilled quickly and easily, resulting in uninterrupted processing and minimum downtime. No hassles with tape replacement.

After processing, the protection layer can be removed easily with SCHNEIDER’s solutions for deblocking and tape-stripping.

---

### technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>lens diameter</td>
<td>up to Ø 85 mm</td>
</tr>
<tr>
<td>lens material</td>
<td>CR39, Hi-index, Polycarbonate, Trivex®</td>
</tr>
<tr>
<td>lacquer tank capacity</td>
<td>1l (33.82 fl.oz.)</td>
</tr>
<tr>
<td>curing method</td>
<td>UV LED</td>
</tr>
<tr>
<td>power consumption</td>
<td>2.3 kVA avg.</td>
</tr>
<tr>
<td>air requirement</td>
<td>min. 6 bar (87 psi)</td>
</tr>
<tr>
<td>weight machine</td>
<td>approx. 500 kg (1103 lb.)</td>
</tr>
<tr>
<td>dimensions without control panel</td>
<td>1560 x 1351 x 1715 mm (62 x 54 x 68 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.

### Benefits

- Fully automated lens protection
- No bubbles, wrinkles, or detaching — even with extreme lenses
- Uninterrupted processing all shift long
- Fast and easy lacquer refill
- Ecological solution resulting in significant waste reduction
- More cost effective than tape
- Designed for Modulo Control Center integration

---

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
CCB modulo
Automated alloy-free blocking, intelligently combined
Introducing the CCB modulo

With the development of the alloy-free and high-performance thin film blocker, CCB Modulo, SCHNEIDER demonstrates its investment in green sustainable technologies. The groundbreaking innovation meets the rising requests of an economical, sustainable and environmentally-friendly production.

Parallel processing steps combined with an intelligent block piece concept and highly accurate positioning of the lens ensure lowest costs as well as high quality and stability. Even high prisms can be processed with the brand new and powerful Eco-Fuse Technology (EFT).

Another highlight is the full freedom to use any blank type on the market which makes the CCB Modulo the perfect solution to satisfy all blocking requirements.

As an integral part of the Modulo concept, the CCB Modulo perfectly fits into the Modulo Line as well as into any other industry-proven Rx and freeform installation.

Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.
Perfect task coordination
Several independent handling systems enable the CCB Modulo to run multiple activities simultaneously. Lens pick up, lens measurement, block piece supply and media application are placed in a parallel and easy accessible configuration. After the lenses are picked up from the tray, a high-resolution optical lens recognition and alignment system guarantees perfect positioning of the lens and the block piece. The process flow is managed by independent handling systems for lens and block piece pick up, lens alignment and feeding of the block stations. While the first pair of lenses is processed, the next lenses are already loaded and precisely aligned before they meet their block piece counterparts.

High prism capability
SCHNEIDER’s unique CNC controlled prism and axis adjustment together with a very high mechanical medium stability enable lens positioning with maximum accuracy. Another highlight is the intelligent block piece concept consisting of a highly robust metal piece and a pre-shaped plastic part which can be exchanged. The stable and reusable block pieces guarantee cost reductions and blocking material savings.

No matter how complex the requirements, the EFT system ensures high precision blocking and consistency.

Economical blocking without block rings
Compared to other blocking systems using different block ring sizes, the CCB Modulo features a new and flexible CNC blocking concept without the need for block rings. While block ring based machines suffer from the need for continuous block ring changes leading to high production losses, the CCB modulo ensures continuous machine utilization.

Sustainable alloy-free blocking
Years of experience helped SCHNEIDER to create a new and patented formulation. The environmentally friendly thermoplastic guarantees optimal performance by uniting all important requirements like stability, adhesion, temperature behavior and deblocking on demand.

An intelligent algorithm calculates the required material amount for the thin film blocking which is applied on the block piece.

The Modulo advantage
CCB Modulo comes with an on-board global interface philosophy that allows connection to the Modulo system. Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind solution and is subject to the centralized monitoring Modulo Control Center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Features
- Fully automated Eco-Fuse Technology (EFT) blocking
- Intelligent block piece concept
- Blocking without block rings
- Parallel lens handling, blocking and loading processes
- Camera-based lens recognition and alignment

Benefits
- Consistent precision blocking
- Fully automated operation
- Sustainable production – no toxic waste
- Highest yield
- High performance patented thermoplastic
- Very little material consumption
- Works for single-vision, multi-focal and progressive lenses
- Low cost of ownership compared to other non-alloy solutions
- Supports the new cognitive Modulo machine philosophy
technical data

- lens diameter: up to ø 85 mm
- lens material: all organic lens materials
- blocking material: EFT
- clamping system: block ø 43 mm
- prism angle: up to 6°
- power consumption: 2 kVA avg.
- air requirement: 6 bar (87 psi)
- weight machine: approx. 1000 kg (2205 lb.)
- dimensions without control panel: (width x depth x height) approx. 2220 x 1340 x 1915 mm (88 x 53 x 75 inches)

All data subject to change without notice. Please verify details with SCHNEIDER.

SCHNEIDER

We are one of the world’s leading suppliers of processing solutions to the ophthalmic and (ultra-)precision optical industry. Founded in 1986 our company is known as the pioneer of freeform and setting the pace. We are distinctive for our development of new technologies and swift translation of technological concepts into customer-oriented innovations. Our success stems from the creativity, commitment and enthusiasm of our highly qualified team. With our locations in Germany, the US, Brazil, Hong Kong, China and Thailand we support our customers at any time – worldwide, with fascination for innovation.
CCU modulo
Automated blocking, intelligently combined
Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.

Introducing the CCU modulo

The high-performance blocker, CCU Modulo, automatically joins semi-finished blanks and block pieces with highest precision. Parallel processing steps combined with the economical use of the blocking material brings your whole surfacing operation up to speed while significantly reducing costs.

We have designed this future-proof machine with your installed machine base in mind. Compatible with today’s blocking standards and consumables, the CCU Modulo is the perfect solution to take over all of your current blocking requirements with no need to redesign the subsequent surfacing steps.

As an integral part of the Modulo concept, the CCU Modulo perfectly fits into the Modulo Line as well as into any other industry-proven Rx and freeform process.
Perfect task coordination
Several independent handling systems enable CCU Modulo to run multiple activities simultaneously. Lens pick-up, block piece supply, lens measurement and the three blocking stations are placed in a small, easy access configuration. The two robotic arms, mounted in the middle of the operating platform, work virtually non-stop. Together with an independent third loading arm the system maximizes parallel-running processes, significantly reducing idle time and boosting efficiency as well as throughput. While lenses are cooling down in the blocking stations, the next lenses are already loaded and precisely aligned before they meet their block piece counterparts. Blocking as fast as it gets!

Economical blocking
The computer controlled filling process of the CCU Modulo guarantees very economical blocking with minimized losses. A cartridge magazine containing 160 block pieces enables long uninterrupted processing. The cartridges are refilled outside of the machine resulting in no production downtime. The use of the reusable block pieces minimizes the consumption of blocking media significantly.

From alloy to non-alloy
With a mechanical upgrade the CCU Modulo can be converted from alloy to Connex. The new Connex is a plastic blocking media, which is free of hazardous elements, fully reusable, and recyclable. This leads to the lowest blocking costs per lens in the industry.

Highest precision, best surfacing results
The high-resolution optical lens recognition and alignment system guarantees a perfect position of the lens and the block piece. Unique CNC controlled prism and axis adjustment and the variable lens clamping position ensure perfectly blocked lenses no matter how complex the requirements. The result is high precision blocking and consistency over long periods of operation.

The team player
CCU Modulo comes with an on-board global interface philosophy that allows connection to the Modulo system. Once connected to the LMS Modulo and management cockpit, the generator works as an integral part of this one-of-a-kind system solution and is subject to the centralized monitoring and control center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher up-times and increased yields are guaranteed.

Features
- Fully automated blocking
- Three blocking stations
- Parallel lens handling, blocking and loading processes
- Camera-based lens recognition and alignment
- Prismatic blocking

Benefits
- Consistent precision blocking
- Fully automated operation
- Highest yield
- Works for single-vision, multi-focal and progressive lenses
- Low running costs
- Mechanical upgradeability from alloy to Connex version
- Supports the new cognitive Modulo machine philosophy
technical data

lens diameter up to ø 85 mm

lens material all organic and mineral lens materials

blocking material alloy

blocking diameter 53 – 63 mm

blocking height 7 – 10 mm

clamping system block ø 43 mm

prism angle up to 5° (optional: 7°)

power consumption 2.4 kVA avg.

air requirement 6 bar (87 psi)

weight machine approx. 1000 kg (2205 lb.)

dimensions without control panel (width x depth x height) approx. 1650 x 1360 x 1715 mm (65 x 54 x 68 inches)

All data subject to change without notice. Please verify details with SCHNEIDER.
CCS modulo
Automated stacking, intelligently combined
CCS Modulo

The Modulo Line’s fully automated compact stacking unit, CCS Modulo, is the perfect solution for stacking job trays for curing of blocked lenses.

Highly flexible and adaptable the SCHNEIDER stacker supports various different job tray formats and provides the option to adjust the curing times to your individual needs. Designed modularly, the CCS Modulo can be configured to take between 4 and 7 stacks, of up to 10 job trays – allowing you to choose the perfect size to match your capacity requirements.

The full configuration is capable of stacking the throughput of several CCU blockers, making the CCS Modulo the perfect addition to the line.

Benefits

- Sizes to match different capacities
- Supports various tray types
- Adjustable curing times
- High safety standards
- Connected to the Modulo Line environment
- Supports the new cognitive Modulo machine philosophy

**technical data**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stacking speed (per tray)</td>
<td>7s per tray</td>
</tr>
<tr>
<td>Throughput (average curing time of 30 min)</td>
<td>up to 140 jobs per hour</td>
</tr>
<tr>
<td>Controller</td>
<td>32-bit embedded PC</td>
</tr>
<tr>
<td>Maximum stack height</td>
<td>592 mm (23.5 inches) resp. 10 trays</td>
</tr>
<tr>
<td>Maximum capacity</td>
<td>70 trays</td>
</tr>
<tr>
<td>Power consumption</td>
<td>0.3 kVA avg.</td>
</tr>
<tr>
<td>Air requirement</td>
<td>6 bar (87 psi)</td>
</tr>
<tr>
<td>Machine weight</td>
<td>approx. 290 kg (640 lb.)</td>
</tr>
<tr>
<td>Dimensions (width x depth x height)</td>
<td>approx. 2610 x 690 x 1720 mm (103 x 28 x 68 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
HSC modulo XT®
Next level generating, intelligently combined
Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.

A stroke of genius. Redefining acceleration

With HSC Modulo XTS, SCHNEIDER has accomplished a quantum leap in high-speed cutting, creating the fastest generator in the market.

The heart of the machine is the new and extremely powerful XS-motor, redefining acceleration in ophthalmics. The generator’s machine base has been designed to be extra rigid to withstand the extreme forces exerted.

Combined with high frequency drive technology, a new milling spindle, and intelligent algorithms, an ingenious generator is formed. A sophisticated swarf management system efficiently keeps the work space clean.

The result: The best lens in the shortest time – Full stop.
New super dynamic motor concept
What sets the HSC Modulo XTS apart from any other generator on the market is its intelligent and versatile two-motor concept. The new and masterfully designed XS-Tec motor has been six years in the making and brings great power to the tracks.

With an acceleration of up to 40-times the gravitational acceleration, it exceeds any levels previously known in ophthalmics. In addition, the machine features the proven RS-Tec motor, which has become a benchmark for its high robustness and uptime. The linear motor runs on high-precision guides and supports single-tool and twin-tool operation.

Ultimately, this setup allows you to select the perfect individual combination of milling and turning processes to meet your lens requirements with highest speed.

Most robust design and machine base
Super power can only be harnessed when it's based on a structure and components that provide ideal support. Therefore, the machine's components underwent an extensive simulation and design phase. The result: The HSC Modulo XTS' extra rigid machine base and cross-slide withstand the extreme forces exerted and guarantee highest machine stiffness and process stability.

This way, the great power of the XS-Tec motor is translated into super-fast but highly accurate movements significantly speeding-up lens production. At the same time, highest surface smoothness is guaranteed, one of the key elements of superior lens quality.

New high-performance milling and intelligent swarf management
The new and extra robust spindle is fit for heavy duty processing at highest rpm. Newly developed milling algorithms allow for higher efficiency. The process is significantly accelerated – especially beneficial for lens shapes like e.g. complex crib that are rising in demand.

The HSC Modulo XTS is designed with an encapsulated milling chamber containing the swarf generated and transferring it straight out of the machine. Fumes are directly extracted. All in all, the result is a neat work space requiring less cleaning activities. Reduced downtime and higher throughput is guaranteed.

Integrated measurement system
During the setup of the machine, the Calibration and Verification System (CVS) helps to align the tools. Thanks to the automated process the tools are perfectly calibrated independent of the skill-level of the operator. This way processes are running in spec – lens after lens.

The Modulo advantage
HSC Modulo XTS comes with an on-board global interface philosophy that allows connection to the Modulo system.

Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind solution and is subject to the centralized monitoring Control Center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Benefits
— Unmatched throughput, unmatched quality
— Superior design replication
— Unsurpassed surface roughness
— Full surfacing capability for all curves and materials
— Processing of high-wrap lenses
— Immediate swarf removal
— Direct fume extraction
— Rugged industrial design
— Supports the new cognitive Modulo machine philosophy

Integrated measurement system
During the setup of the machine, the Calibration and Verification System (CVS) helps to align the tools. Thanks to the automated process the tools are perfectly calibrated independent of the skill-level of the operator. This way processes are running in spec – lens after lens.

The Modulo advantage
HSC Modulo XTS comes with an on-board global interface philosophy that allows connection to the Modulo system.

Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind solution and is subject to the centralized monitoring Control Center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Benefits
— Unmatched throughput, unmatched quality
— Superior design replication
— Unsurpassed surface roughness
— Full surfacing capability for all curves and materials
— Processing of high-wrap lenses
— Immediate swarf removal
— Direct fume extraction
— Rugged industrial design
— Supports the new cognitive Modulo machine philosophy

New high-performance milling and intelligent swarf management
The new and extra robust spindle is fit for heavy duty processing at highest rpm. Newly developed milling algorithms allow for higher efficiency. The process is significantly accelerated – especially beneficial for lens shapes like e.g. complex crib that are rising in demand.

The HSC Modulo XTS is designed with an encapsulated milling chamber containing the swarf generated and transferring it straight out of the machine. Fumes are directly extracted. All in all, the result is a neat work space requiring less cleaning activities. Reduced downtime and higher throughput is guaranteed.
technical data

- lens diameter: up to ø 96 mm
- clamping system: block ø 43 mm
- lens material: CR39, Hi-index, Polycarbonate, Trivex®
- curve range:
  - concave: 0 – 14 (extendable to 30) diopters
  - convex: 0 – 30 diopters
- power consumption: 8.0 kVA avg.
- air requirement: 6 bar (87 psi)
- weight machine: approx. 2250 kg (4960 lb.)
- dimensions (width x depth x height) without control panel: approx. 1600 x 2020 x 1715 mm (63 x 80 x 68 inches)

All data subject to change without notice. Please verify details with SCHNEIDER.

SCHNEIDER

We are one of the world’s leading suppliers of processing solutions to the ophthalmic and (ultra-)precision optical industry. Founded in 1986 our company is known as the pioneer of freeform and setting the pace. We are distinctive for our development of new technologies and swift translation of technological concepts into customer-oriented innovations. Our success stems from the creativity, commitment and enthusiasm of our highly qualified team. With our locations in Germany, the US, Brazil, Hong Kong, China and Thailand we support our customers at any time – worldwide, with fascination for innovation.
CCP modulo

Next level polishing, intelligently combined
Introducing the CCP "modulo" S

CCP Modulo S is the latest generation of the proven and widespread CCP Modulo machine series. The high-quality two-lens polisher allows for polishing the widest range of curvatures in the market and is now even faster.

Its most modern process technology significantly boosts productivity. Tool handling and lens handling, lens cleaning and lens polishing – the multi-tasking pro is designed to run all these processes in parallel.

The process technology featuring long-life polishing pads as well as an innovative process design allows for significant savings in costs per lens.

Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.
The harmony of interacting motion
Axes moving smoothly, handling systems interacting swiftly, accompanied by visual tool sensors monitoring and supervising – CCP Modulo S’ processes are perfectly choreographed and controlled.

This way, the polisher can do several things at a time like e.g. simultaneous tool and lens change parallel to lens cleaning. Ultimately, its fast and precisely tuned motions form the foundation for automated polishing with highest productivity – 24/7, without interruptions.

Few tools, full range, best quality
The brand-new process generation with its S+ adaptive tool set, uses the proven “click-easy” lock system and guarantees shorter polishing times, longer tool lifetime, and provides higher flexibility.

Special attention was paid to the smoothness of lens shape especially in the sensitive lens center. Lowest waviness and best surface roughness values are the outcome – paired with an unsurpassed process stability.

Advanced polishing system
The Advanced Polishing System (APS) uses sophisticated database-driven selection routines, optimal material-specific pads and polishing routines are chosen, resulting in unbeaten polishing performance.

Unlike competing systems, the CCP Modulo S tool change is fully automated. An intelligent pad identification system avoids operator based tool mismatch. The machine operation has never been so easy. The system monitors the pad wear and sorts out worn pads based on special decision algorithms. So, the CCP Modulo strictly meets your quality requirements.

The Modulo advantage
CCP Modulo S comes with an on-board global interface philosophy that allows connection to the Modulo system.

Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind solution and is subject to the centralized monitoring Control Center. The lab manager is fully informed about the current status of the machine. Therefore, critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Benefits
- Unmatched quality in the market
- Increased throughput (+25%)
- Automated operation and tool change – all shift long
- Polishing of all lens designs in the widest curve range
- Perfect solution for RX and freeform lenses
- “Click-easy” disposable tools
- Long lasting S+ polishing pads
- Supports the new cognitive Modulo machine philosophy
SCHNEIDER
We are one of the world’s leading suppliers of processing solutions to the ophthalmic and (ultra-)precision optical industry. Founded in 1986 our company is known as the pioneer of freeform and setting the pace. We are distinctive for our development of new technologies and swift translation of technological concepts into customer-oriented innovations. Our success stems from the creativity, commitment and enthusiasm of our highly qualified team. With our locations in Germany, the US, Brazil, Hong Kong, China and Thailand we support our customers at any time – worldwide, with fascination for innovation.
PMD modulo
Automated in-line quality inspection, intelligently combined
Fully automated quality inspection
In-line measurement of blocked lenses.

With PMD Modulo SCHNEIDER introduces quality inspection to the fully automated production environment. For the first time blocked lenses can be measured automatically in-line without interrupting production.

Utilizing UV light for deflectometrical measurement, PMD Modulo is unaffected by common issues with transmissive measurements. It measures dipters and cosmetics directly and non-destructively based on one sole reflection. No need to deblock the lens.

PMD Modulo evaluates lenses on the fly with high resolution and without touching the lens. For the first time, on-the-block lens measurement occurs right after lens surfacing, avoiding the drastic time gap between manufacturing and quality inspection of current productions.

Maximum value is gained from the UV-PMD in conjunction with the LMS Modulo Cockpit. Integrating the PMD into the Modulo system opens up extensive new opportunities to analyze the collected data. The results are various new options and features that can considerably increase the value of your production line, e.g. a quality gate and quality trend recognition.

**technical data**

<table>
<thead>
<tr>
<th>lens material</th>
<th>all organic materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>surface</td>
<td>polished</td>
</tr>
<tr>
<td>measurement area</td>
<td>up to 80 x 80 mm</td>
</tr>
<tr>
<td>measurement range</td>
<td>base curve</td>
</tr>
<tr>
<td>concave</td>
<td>r = –62.5 mm ... ∞</td>
</tr>
<tr>
<td>convex</td>
<td>r = –50 mm ... ∞</td>
</tr>
<tr>
<td></td>
<td>r = 80 mm ... ∞</td>
</tr>
<tr>
<td></td>
<td>r = 80 mm ... ∞</td>
</tr>
<tr>
<td>measurement accuracy</td>
<td>+/- 0.03 dpt</td>
</tr>
<tr>
<td>power consumption</td>
<td>4.9 kVA avg.</td>
</tr>
<tr>
<td>air requirement</td>
<td>6 bar (87 psi)</td>
</tr>
<tr>
<td>weight machine</td>
<td>approx. 1150 kg (2536 lb.)</td>
</tr>
<tr>
<td>dimensions without control panel</td>
<td>approx. 1740 x 1320 x 1715 mm</td>
</tr>
<tr>
<td></td>
<td>(69 x 52 x 68 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.

**Benefits**

- Automated in-line measurement
- Measurement of blocked lenses in production
- On the fly lens evaluation
- Rx and freeform measurements
- Dipteter and cosmetics measurement
- Supports the new cognitive Modulo machine philosophy

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
CCL modulo

Automated laser marking, intelligently combined
CCL modulo

With the CCL Modulo laser marking system, fine markings are accomplished with ease and precision.

Based on an industry-proven CO₂ laser, we refined the laser performance by implementing a proprietary actively controlled laser stabilization circuit. The result: you get consistent high-quality laser markings day after day and year after year without operator intervention.

The CCL Modulo has been designed for a wide range of marking requirements handling essentially all jobs in line. The robust design and implemented safety features exceed international safety regulations, reducing operator intervention to a minimum.

Benefits

- High-resolution marking
- Actively controlled laser stability
- Highest consistency of markings
- High throughput
- Adjustable laser marking visibility
- No consumables
- Automated operation
- Minimum maintenance
- High safety standards
- Supports the new cognitive Modulo machine philosophy

### technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens material</td>
<td>CR39, Hi-Index, Polycarbonate, Trivex®</td>
</tr>
<tr>
<td>Marking field size</td>
<td>ø 65 mm</td>
</tr>
<tr>
<td>Dot size</td>
<td>approx. 100 μm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 30 μm</td>
</tr>
<tr>
<td>Clamping system</td>
<td>block ø 43 mm</td>
</tr>
<tr>
<td>Power consumption</td>
<td>2 kVA avg.</td>
</tr>
<tr>
<td>Air requirement</td>
<td>min. 6 bar (87 psi)</td>
</tr>
<tr>
<td>Laser safety</td>
<td>laser class I</td>
</tr>
<tr>
<td>Weight machine</td>
<td>approx. 420 kg (926 lb.)</td>
</tr>
<tr>
<td>Dimensions without control panel (width x depth x height)</td>
<td>approx. 900 x 1320 x 1715 mm (36 x 52 x 68 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.
CCL modulo X
Automated excimer laser marking, intelligently combined
CCL modulo X

The powerful excimer laser, CCL Modulo X, has been designed for the fully automated production environment providing highest throughput and excellent marking quality.

Its three stations and fast automation support simultaneous loading, marking, and unloading, to reduce non-productive times to an absolute minimum.

Unlike other excimers, CCL Modulo X relies on a new ultra-fast full lens scanning concept that allows marks anywhere on the lens without time consuming lateral lens repositioning. The result is a significantly higher throughput compared to other excimers. The laser intensity can be easily adjusted according to the requirements.

Whether logos, symbols, additions or other markings, the powerful Argon Fluoride laser consistently produces high-quality markings on all organic and mineral materials. Ablating the material, heat affected zones are prevented that may cause problems such as color deviations and chromatic aberrations in the subsequent coating or tinting process.

The combination of high throughput, highest-quality results, low running costs, and low maintenance makes CCL Modulo X a sound investment for any larger lab.

### Benefits
- Consistently high throughput of 300+ lenses/hour
- Excellent marking quality on any material
- Adjustable laser marking visibility
- Long-lasting laser
- Low maintenance
- Efficient energy monitoring
- High safety standards
- Supports the new cognitive Modulo machine philosophy

### Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens Material</td>
<td>All organic and mineral glasses</td>
</tr>
<tr>
<td>Marking Field Size</td>
<td>ø 100 mm</td>
</tr>
<tr>
<td>Dot Size</td>
<td>approx. 80 μm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>+/- 30 μm</td>
</tr>
<tr>
<td>Clamping System</td>
<td>block ø 43 mm</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>1 kVA avg.</td>
</tr>
<tr>
<td>Air Requirement</td>
<td>6 bar (87 psi)</td>
</tr>
<tr>
<td>Laser Safety</td>
<td>Laser class I</td>
</tr>
<tr>
<td>Weight Machine</td>
<td>approx. 600 kg (1323 lb.)</td>
</tr>
<tr>
<td>Dimensions without control panel (width x depth x height)</td>
<td>approx. 1275 x 1450 x 1800 mm (51 x 57 x 71 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.
DTS modulo

Automated deblocking and tape-stripping, intelligently combined
**DTS modulo**

Designed as a perfect supplement to the CCB Modulo, the DTS Modulo provides a smooth and efficient technology for deblocking and tape-stripping of two lenses simultaneously. After pretreatment, the fast handling system transfers the lenses into the working chamber. The EFT layer is removed with warm water thus separating the lenses safely and very fast from the block pieces without any residue.

In the following process step the tape is removed without the danger of lens breakage. The block pieces are sorted in boxes and prepared for quick reuse in the CCB Modulo, guaranteeing maximum ease of use. The tape and EFT material are collected using a band filter system and can be disposed of easily.

Suitable for all lens materials, the DTS Modulo is the optimal choice to meet the demands of mid- and high-performance labs.

Maximum value can be gained due to an on-board interface philosophy that allows connection to the automated Modulo system.

### technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>lens diameter</td>
<td>up to ø 85 mm</td>
</tr>
<tr>
<td>lens material</td>
<td>all organic materials</td>
</tr>
<tr>
<td>power consumption</td>
<td>10 kVA avg.</td>
</tr>
<tr>
<td>air requirement</td>
<td>6 bar (87 psi)</td>
</tr>
<tr>
<td>weight machine</td>
<td>approx. 850 kg (1874 lb.)</td>
</tr>
<tr>
<td>dimensions (width x depth x height)</td>
<td>approx. 1750 x 1800 x 1715 mm</td>
</tr>
</tbody>
</table>

(69 x 71 x 68 inches)

All data subject to change without notice. Please verify details with SCHNEIDER.

### Benefits

- Fully automated deblocking and tape-stripping in one unit
- Automated cleaning and sorting of block pieces
- Highest throughput
- Lowest danger of lens breakage
- Easy plug & play installation
- Low maintenance
- Supports the new cognitive Modulo machine philosophy

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
DBA modulo

Automated deblocking, intelligently combined
Experience a new level of automation and efficiency with the one of a kind automated deblocker DBA Modulo. Drawing on Team Henrich & Krall’s extensive experience in the field of smart automated solutions the DBA Modulo promises highest process robustness and stability. The fast handling system safely transfers the job into the working chamber where the alloy is melted with hot water in a multi step process, separating the lens with high speed from the block.

In a matter of seconds the DBA Modulo gently removes the alloy without the danger of lens breakage that occurs with the conventional deblocking methods. Suitable for all lens materials and all alloy types the DBA Modulo can be used in any lab environment.

After deblocking the lenses are directly brought back to the tray while the block pieces and the alloy are prepared for immediate reuse in the blocker. The block pieces are collected in a block piece magazine for direct reuse in the CCU guaranteeing a maximum ease of use. The deblocker is the optimal choice to deblock high volumes of jobs easily and efficiently.

Maximum value can be gained in conjunction with other machine modules of the line due to an on-board interface philosophy that allows connection to the automated Modulo system.

Maximum ease of use
Block pieces are automatically collected for direct reuse in the CCU.

### Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens Diameter</td>
<td>up to Ø 80 mm</td>
</tr>
<tr>
<td>Lens Material</td>
<td>all organic and mineral materials</td>
</tr>
<tr>
<td>Block Material</td>
<td>all alloy types</td>
</tr>
<tr>
<td>Block Piece</td>
<td>all common block pieces</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>11 kVA avg.</td>
</tr>
<tr>
<td>Air Requirement</td>
<td>min. 6 bar (87 psi)</td>
</tr>
<tr>
<td>Water Requirement</td>
<td>demineralized water</td>
</tr>
<tr>
<td>Weight Machine</td>
<td>approx. 550 kg (1213 lb.)</td>
</tr>
<tr>
<td>Dimensions (Width x Depth x Height)</td>
<td>approx. 2084 x 1904 x 2000 (83 x 75 x 79 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.

### Benefits

- Supports the new cognitive Modulo machine philosophy
- Fully automated deblocking
- Highest throughput
- Lowest danger of lens breakage
- Automated recycling of block pieces and alloy for immediate reuse
- Easy plug & play installation
- Low maintenance
- Perfect supplement to CCU Modulo

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
TSA modulo
Automated tape-stripping, intelligently combined
The automated tape-stripper TSA Modulo, powered by Insomec, offers a new level of automation and efficiency.

Without operator intervention lenses are picked up, centered and transferred to the working chamber where the tape is removed quickly and damage-free. The perfect combination of the right preparation, water pressure and temperature is the key to quick and safe removal. The result is highest throughput and a perfect yield. Suitable for all plastic lenses the TSA Modulo can be used in any lab environment. The removed tape is collected in a basket and can be disposed of easily.

The TSA Modulo is the optimal choice to meet the demands of high-performance labs, ensuring productivity that can’t be matched manually.

The TSA Modulo can be used in any lab environment. Maximum value can be gained in conjunction with other machine modules of the line due to an on-board interface philosophy that allows connection to the automated Modulo system.

Benefits
- Supports the new cognitive Modulo machine philosophy
- Fully automated tape-stripping
- High throughput
- Lowest danger of lens breakage
- Highest yield
- Suitable for all plastic lenses
- Easy plug & play installation
- Low maintenance
- Small footprint

All data subject to change without notice. Please verify details with SCHNEIDER.
LCU 120
Automated cleaning, intelligently combined
LCU 120

The fully automated lens cleaner, LCU 120, effectively cleans large volumes of lenses in a very small footprint. Depending on the requirements, the brush cleaner is available in two versions. The basic version is designed specifically for cleaning the backside of frontside coated lenses. The extended version cleans the frontside as well as the backside.

The lenses are automatically transferred through the multi-step process. Rotating brushes clean the lenses gently and without damage. The special brush-to-lens arrangement immediately casts off the dirt particles, so they can’t scratch the sensitive lens surface. Contaminations like adhesive residues or fingerprints are efficiently removed.

Finally, the lenses are rinsed with DI water, before they are dried and transferred back to the tray.

Connected to the SCHNEIDER Control Center, the brush cleaner is subject to continuous process monitoring.

LCU 120 is the perfect solution for midsized and large labs that value fast but high-quality cleaning results – ready for subsequent coating processes.

Benefits
- Fully automated cleaning process
- Excellent cleaning results
- 100 – 120 lenses per hour
- No pretreatment or precleaning required
- Small footprint combined with high efficiency
- Low total cost of ownership
- Short ROI periods

![Efficient design](image)
The three stations allow for simultaneous cleaning, rinsing and drying to guarantee high efficiency.

![Fully automated](image)
The lenses are automatically transferred through the multistep process without any operator intervention.

![Quality cleaning, without damage](image)
The sensitive lens surface is cleaned gently without damage thanks to the special arrangement featuring rotating brushes.

## technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>lens diameter</td>
<td>from 45 to 80 mm</td>
</tr>
<tr>
<td>lens material</td>
<td>all common materials</td>
</tr>
<tr>
<td>power consumption</td>
<td>9.6 kVA avg., rated current 20 A, pre fuse 32 A</td>
</tr>
<tr>
<td>air requirement</td>
<td>min. 6 bar (87 psi), oilfree</td>
</tr>
<tr>
<td>water requirement</td>
<td>DI-water, conductivity &lt; 10 µS/cm</td>
</tr>
<tr>
<td>weight machine</td>
<td>approx. 420 kg (926 lb.)</td>
</tr>
<tr>
<td>dimensions (width x depth x height)</td>
<td>approx. 1200 x 2000 x 2105 mm (48 x 79 x 83 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.
Fully automated cleaning line showing the separate loading robot HRA, the cleaning unit LCU Modulo and the unloading PRA robot.

LCU modulo
Automated cleaning, intelligently combined
The LCU Modulo is a fully automated and integrated lens cleaning system with brushes. The machine represents a powerful and efficient inline system to remove contaminations like adhesive residues or fingerprints and to prepare all different kinds of lenses for subsequent coating processes.

To enable a fully automated lens production the LCU Modulo can be extended with the loading robot HRA. After unloading and positioning the lenses in a special cup they get pre-centered. A second suction gripper takes them and transfers them to a sensor scanning the complete edges of the lenses. Following this, the integrated software calculates the orientation by measuring the distance of the gripper in order to load the lenses in the optimal clamping position in the LCU Modulo.

During the first cleaning phase the lenses get cleaned by using suitable chemicals as well as gentle and safe brushes. The second stage includes a DI-water cascade removing the chemicals and contaminations. During the third stage the lenses get dried. After drying an optional unloading robot PRA, which can be easily integrated into the LCU Modulo, takes the lenses out of the running belt and puts them back in the coating job tray. If needed, the lenses are transferred on a conveyor belt leading directly to a cosmetic inspection area as well as the preparation area for the hard coating.

**Benefits**
- Fully automated inline process
- In-line brush cleaning of up to 300 lenses/hour
- Additional impulse drying option for drying process
- Automated loading and unloading option
- No pre-cleaning needed
- Low cleaning costs per lens
- Short ROI periods

All data subject to change without notice. Please verify details with SCHNEIDER.

---

**technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>lens diameter</td>
<td>from 40 to 80 mm</td>
</tr>
<tr>
<td>lens material</td>
<td>all organic and mineral materials</td>
</tr>
<tr>
<td>option</td>
<td>flow heater for DI-Water and PRA for automatic unloading</td>
</tr>
<tr>
<td>power consumption</td>
<td>35 kVA</td>
</tr>
<tr>
<td>air requirement</td>
<td>min. 6 bar (87 psi)</td>
</tr>
<tr>
<td>water requirement</td>
<td>DI-water conductivity &lt; 1 μScm, 1,5 l/min</td>
</tr>
<tr>
<td>weight machine</td>
<td>approx. 1800 kg (3968 lb.)</td>
</tr>
<tr>
<td>dimensions (width x depth x height)</td>
<td>approx. 2000 x 1615 x 1930 mm (79 x 64 x 76 inches) with automation: approx. 8530 x 3384 x 2860 mm (336 x 133 x 113 inches)</td>
</tr>
</tbody>
</table>

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com
HSE modulo
Automated edging, intelligently combined
Introducing the HSE modulo

The first high speed double spindle edger for fully independent edging of the left and the right lens – on-the-block or blockless. The two separate multi-axis systems enable truly independent simultaneous processing of the lenses – no matter how diverse the job requirements.

The edger’s high rigidity and precise tool clamping allow for highest rpm processes. Working with exceptional speed, HSE Modulo sets new standards in performance and throughput.

The intuitive and easy to use shape editor opens up a broad range of finishing options to process even the latest complex styles, specialties included. The result: virtually unrestricted lens finishing. And with the SCHNEIDER blockless edging option costs can be reduced significantly.

Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.
Highest speed for massive throughput
The HSE Modulo fulfills all the criteria for accurate high-speed edging: Built on an extra solid machine base the double spindle edger features the high rigidity to produce the smoothest surfaces. Perfectly centered tools and highest rpm processes provide ideal conditions for very precise and fast edging. Extremely efficient, the edger processes two lenses simultaneously and incorporates time saving parallel handling processes. While the fast handling system uploads the finished job, the next job is transferred to the working chamber, minimizing non-productive time. The result: a new standard in throughput.

Unrestricted lens finishing for flawless first fit
The Modulo edger with its 2x4-axis design achieves highest feature accuracy and delivers a flawless and unmatched first fit rate even with extreme curves. Whether angled rimless drilling, V-beveling, T-grooving or polishing – HSE Modulo does it all with its set of 24 tools. The high-frequency milling spindles enable fast cut out of the rough shape. Afterwards the fine work is done with precision — including front and back safety bevels. For delicate lenses such as super-hydrophobics, the chucking pressure and rotation speed are automatically adjusted to prevent slippage.

Fashion’s best friend
The HSE Modulo is prepared to keep up with the constantly changing requirements of fashion – today and tomorrow. The advanced Shape Editor offers simple programming of virtually any shape in fashion, even the most complex. The elaborate software performs all optimizations fully automated to grant the best results without specific operator expertise. The HSE Modulo is designed to work with existing tracers on the market linked via the VCA/OMA protocol.

Excellent aesthetics
The right bevel positioning is the result of a sophisticated and skilled combination of several – sometimes divergent – factors and conditions. The sophisticated set of beveling rules and options automatically produce better aesthetics with all common and complex jobs using a new algorithm based auto beveling function. Together with the automated size adjustment, best fit with superb aesthetics is guaranteed.

Integrated quality control
Optionally, HSE Modulo comes with an integrated optical measurement unit — LMU. For the first time ever, quality can be measured based on the full lens map inside an edger. The result is a fully automated quality control before further manufacturing steps occur. Mismatch is avoided, labor is reduced, and process efficiency gains are unmatched.

The Modulo advantage
HSE Modulo comes with an on-board global interface philosophy that allows connection to the Modulo system.

Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind system solution and is subject to the centralized monitoring Control Center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Benefits
— Best fit rate and highest throughput
— Robust machine design
— Intuitive, simple to use shape editor
— Broad range of finishing options
— Automated front and backside safety beveling
— On-the-block or blockless
— Supports the new cognitive Modulo machine philosophy

SCHNEIDER blockless option
The HSE Modulo is able to work with blocked lenses or it can be fitted with the SCHNEIDER blockless option. The fast non-tactile measurement technology measures the spherical and cylindrical power, axes and prism to determine the right lens position. Alternatively the system recognizes visible and semi-visible marks and printings. Working blockless, the HSE Modulo reduces costs and eliminates handling errors. No need for time consuming manual blocking. No costs for consumables.

SCHNEIDER blockless option
The blockless option reduces costs and eliminates handling errors.

Optional integrated quality control
Full map optical measurement unit LMU allows for quality control inside HSE Modulo.

TMU Modulo
Upon request, HSE Modulo comes with a high precision calibration unit, TMU Modulo.

Tool changer
The industrial tool changer handles multi-purpose and special tools covering the broadest range of processing options.

Advanced shape editor
The integrated shape editor comes with virtually unlimited options.
technical data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens diameter</td>
<td>up to ø 85 mm</td>
</tr>
<tr>
<td>Lens thickness</td>
<td>up to ø 30 mm</td>
</tr>
<tr>
<td>Lens material</td>
<td>CR39, Hi-index, polycarbonate, Trivex®, Tribid™</td>
</tr>
<tr>
<td>Minimum B-size (depending on the used block piece)</td>
<td>with WECO standard block piece 22 mm</td>
</tr>
<tr>
<td>Blocking chucks</td>
<td>all common types</td>
</tr>
<tr>
<td>Blockless option</td>
<td>no blocks needed</td>
</tr>
<tr>
<td>Power consumption</td>
<td>3.3 kVA avg.</td>
</tr>
<tr>
<td>Air requirement</td>
<td>6 bar (87 psi)</td>
</tr>
<tr>
<td>Weight machine</td>
<td>approx. 1650 kg (3638 lb.)</td>
</tr>
<tr>
<td>Dimensions without control panel (width x depth x height)</td>
<td>approx. 2055 x 1610 x 2110 mm (81 x 63 x 83 inches)</td>
</tr>
</tbody>
</table>

All data subject to change without notice. Please verify details with SCHNEIDER.
HSE modulo Q
Automated edging, intelligently combined
Meet the first and only edger on the market with four processing stations, setting a new benchmark in industrial edging.

Thanks to its unique quattro design featuring two rough cut and two finishing stations, four lenses are processed simultaneously at highest speeds for exceptional throughput. Non-productive times are reduced to a minimum through parallel processing and high speed handling systems.

The two sophisticated LMU optical measurement units provide fully automated quality control based on the full lens map. Working blockless is a given.

Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. The HSC generators and CCP polishers have become the tools used to develop the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market, and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide. The innovative machines have also made their way into standard Rx production, leading to higher productivity and quality of virtually all lenses surfaced today.

The next logical step is a highly integrated system solution: SCHNEIDER’s Modulo Line with its unique combination of high level intelligence and plug-and-play simplicity. Following a new self-organizing philosophy, the cognitive machines manage the production flow all by themselves – fully self-sufficient and with the highest level of equipment utilization. With this, the Modulo Line guarantees easy lab planning and expansion as well as significant cost and time savings.
Designed for unprecedented throughput
HSE Modulo QS has been designed with a single goal in mind – creating a machine that provides unprecedented throughput. This has been achieved through the unique quattro design, a cleverly devised 2x2 design comprising four cutting stations. Up to four lenses are actively cut at the same time, while another two lenses are measured and yet another four are being transferred to or back from the stations.

The powerful edger also features two tactile measurement systems, and two LMU lens measuring units. This allows for parallel processing at its best and reduces non-productive times to a bare minimum.

Substantial time is saved by deploying multiple spindles and eliminating tool changes. Each rough cut station is equipped with a high-frequency milling spindle to cut the rough shape at high speed. The finishing stations are fitted with five tool spindles mounted next to one another. Consequently, instead of changing tools, HSE Modulo QS has all the tools available for immediate utilization. In fractions of a second the next finishing step starts, resulting in extremely short chip-to-chip times.

To provide the rigidity required for high-speed edging with precision and smoothest edge quality, the HSE Modulo QS’s axes are mounted on solid cast iron blocks. Separating the working chambers for cutting and measuring ensures that swarf is contained and the lens measuring units remain clean.

Unrestricted lens finishing for flawless first fit
In its basic configuration, the edger comes with four tool spindles. Optionally, a fifth tool spindle can be added to accommodate extended requirements. Whether angled rimless drilling, V-beveling, front and back safety bevels, T-grooving, polishing, step-back, design cut, and many more – the edger does it all. Highest feature accuracy and a flawless, unmatched first fit rate is achieved even with extreme curves. For delicate lenses such as super-hydrophobics, the chucking pressure and rotational speed are automatically adjusted to prevent slippage.

Excellent aesthetics
The sophisticated set of rules for auto bevel positioning produces better aesthetics with all common and complex jobs. Together with the automated size adjustment, best fit with superb aesthetics is guaranteed.

Integrated quality control, blockless handling
A special feature of the HSE Modulo QS is its two exclusive LMU lens measuring units that provide both blockless handling and integrated quality control. Contrary to other systems, the LMU measures the full map inside the edger. The result is a fully automated quality control before further manufacturing steps occur. Mismatch is avoided, labor is reduced, and process efficiency gains are unmatched.

In addition, the fast non-tactile measurement technology measures the spherical and cylindrical power, axes and prism to determine the right lens position. Alternatively, the system recognizes visible and semi-visible marks and printings. Working blockless, the edger reduces costs and eliminates handling errors.

The Modulo advantage
HSE Modulo QS comes with an on-board global interface philosophy that allows for connection to the Modulo system. Once connected to the Modulo system, the machine works as an integral part of this one-of-a-kind system solution and is subject to the centralized monitoring Control Center. The lab manager is fully informed about the current status of the machine. Therefore critical situations and downtime can be avoided before they arise. Higher uptimes and increased yields are guaranteed.

Benefits
— Best first fit rate and highest throughput
— Robust machine design
— Integrated quality control with LMU
— Intuitive, simple to use shape editor
— Broad range of finishing options
— Premium polished edges
— Blockless handling
— Supports the new cognitive Modulo machine philosophy
technical data

- lens diameter: up to ø 85 mm
- lens thickness: up to ø 30 mm
- lens material: CR39, Hi-index, Polycarbonate, Trivex®, Tribrid ™
- minimum B-size (depending on the used block piece): approx. 22 mm
- power consumption: 6 kVA avg.
- air requirement: 6 bar (87 psi)
- weight machine: approx. 2750 kg (6063 lb.)
- dimensions without control panel (width x depth x height): approx. 1650 x 2950 x 2225 mm (65 x 117 x 88 inches)

All data subject to change without notice. Please verify details with SCHNEIDER.

SCHNEIDER
We are one of the world’s leading suppliers of processing solutions to the ophthalmic and (ultra-)precision optical industry. Founded in 1986 our company is known as the pioneer of freeform and setting the pace. We are distinctive for our development of new technologies and swift translation of technological concepts into customer-oriented innovations. Our success stems from the creativity, commitment and enthusiasm of our highly qualified team. With our locations in Germany, the US, Brazil, Hong Kong, China and Thailand we support our customers at any time – worldwide, with fascination for innovation.
Managing the lab
The production is monitored and controlled with an intelligently designed management cockpit: The Modulo Control Center. It is the only MES system tailored specifically to the needs of ophthalmic production and seamlessly interacts with the cognitive machines.

The smart dashboard presents lab managers with a virtual lab overview and valuable information about the production running, e.g. machine status, efficiency reports, alerts, and preventive maintenance needs. An additional cellphone notification service gives insights on the go.

The system’s intelligent in-line quality control detects quality drifts and performs root-cause analyses for lens breakage. Systematic quality checks can be performed through a special routing functionality.

The open system allows the integration of any equipment following the VCA OMA standards.

Industry 4.0 put into practice
As the first fully-integrated lens production system, Modulo pioneered what is now called Industry 4.0 for the ophthalmic industry. Today it is an integral part of lens production worldwide with installations in Europe, Asia, the USA, and Australia – producing thousands of jobs every hour.

Benefits
- Highly integrated system solution
- Self-organizing cognitive machines
- Unprecedented equipment utilization
- Easy lab layout with plug-and-play simplicity
- New extension possibilities with minimal downtime
- Unique loop-arrangement
- Freedom to combine the machines in any order
- Unmatched throughput
- Reduced cost per lens ratio
- Automated quality management
- Future proof upgradeable system
- Small footprint
The elements of the Modulo Line

SPP modulo
The spin protection system optimally protects lenses during surfacing utilizing UV-curable liquid protection layers.

CCB modulo
The alloy-free and high-performing thin film blocker featuring the brand new EcoFuse Technology.

CCU modulo
The high-performance blocker with three blocking stations for exceptional throughput.

HSC modulo XTS
The fastest generator in the market fitted with high-speed handling systems providing highest quality and productivity without limitations.

CCP modulo S
The best polisher in the market fitted with an extremely powerful XS-motor, accelerating to more than 40 g for unmatched throughput.

PMD modulo
The in-line optical inspection unit to control generated surfaces on-the-block, right after surfacing.

CCL modulo X
The powerful excimer laser with an ultra-fast full lens scanning concept provides highest throughput and excellent quality.

DTS modulo
The perfect supplement to CCB Modulo for smooth and efficient deblocking and tape-stripping of two lenses simultaneously.

DBA modulo
The automated deblocker gently removes the alloy in a matter of seconds without the danger of lens breakage.

TSA modulo
The automated tape-stripper removes the tape quickly and damage-free with waterjets in a matter of seconds.

LCU modulo
The fully automated lens cleaning system with brushes removes contaminations and prepares all kind of lenses for subsequent coating processes.

HSE modulo QS
The fastest edger with four processing stations for edging at highest speeds and exceptional throughput, featuring two sophisticated LMU optical measurement units.

Modulo Control Center
The only MES system tailored specifically to the needs of ophthalmic production which interacts with the machines and offers centralized production control.

SCHNEIDER
We are one of the world’s leading suppliers of processing solutions to the ophthalmic and (ultra-)precision optical industry. Founded in 1986 our company is known as the pioneer of freeform and setting the pace. We are distinctive for our development of new technologies and swift translation of technological concepts into customer-oriented innovations. Our success stems from the creativity, commitment and enthusiasm of our highly qualified team. With our locations in Germany, the US, Brazil, Hong Kong, China and Thailand we support our customers at any time – worldwide, with fascination for innovation.

For a complete list of SCHNEIDER agencies, please visit www.schneider-om.com