Axium Power
CNC System

- From CNC System to Total Solution
- Flexibly, precisely and quickly
- User interface extensively configurable
- Complete systems with operating panels, drives and motors
Our goal is to optimize the overall production process using the latest control technology and to provide superior long-term support. We offer real-world solutions to real-world problems.

NUM has acquired a wealth of knowledge as an engineering partner for the automation of CNC controlled production machines.

**Key element – Axium Power CNC**

The Axium Power CNC is highly expandable and flexible, purposely developed to satisfy a wide variety of applications. It is the answer for small demanding applications as well as large-scale complex ones. The most sophisticated configuration in a multi CNC arrangement can include more than 150 interpolated CNC axes. Due to the configurability of the NUMpass operator interface, the machine users can expect an intuitive layout that provides simple step-by-step operation.
Axium Power CNC: Flexibility, Precision and Productivity

Available in various configurations and equipped with application specific functions and function packages, Axium Power can be customized to meet the specific requirements of most customers.

Adaptable to the application at hand, the combination of the Axium Power CNC with NUM servo drives and motors makes a strong argument. Together, they form an ideal system to transfer the precision of the CNC to the work piece.

First-class algorithms

One part of this precision can be found in the accurate and high-performance algorithms that are part of the system. They are intended primarily to enhance productivity and quality.

Perfectly matched and implemented, they allow you to achieve the highest contour precision using high-speed machining with 5 axes. Even very intricate machining processes produce perfect results while maintaining high productivity and reducing wear on the tool.

NUM as a partner

We would like to show you the many possibilities. They will surprise you!
NUMpass HMI:
Fully configurable user interface and special functions

The human–machine interface NUMpass HMI and its simple programming is the key to customer- or application-specific machine control.

As a supplement to the standard configuration options, the user interface can be configured, with the NUMpass HMI, to fulfill the needs of specific application requirements. The modular structure of the software and its special tools make it possible to easily develop or modify special or customized functions in a real-time application. This allows you to fully take advantage of the machines strong points, logically model the applications and, consequently, increase the efficiency of the machining processes.

The user interface can be easily customized using standard development tools and editors such as HTML, Java, Visual Basic, Delphi, Visual C and C++.

Classifying the operating mode according to contexts allows you to adapt the type of information displayed for each category of users, namely; programmers, set-up technicians, operators, maintenance personnel, etc. The easy-to-use, web-based remote maintenance facility, for the entire system, facilitates and reduces troubleshooting time.
Operating panels for every application: active, passive and expandable

The wide range of NUM operating panels offers just the right concept for each application.

**Active operating panels**

The operating panels of the FS151 family are delivered with an integrated PC or are intended for operation with an external PC. All types are equipped with 22 large function keys. The FS151i/FS151i-KBD with integrated PC is available in two power stages as well as with or without extended Qwerty keyboard. The models FS151/FS151-KBD are available with or without extended Qwerty keyboard.

These operating panels make it possible to easily implement demanding, modern systems. The ideal supplement to all models of the FS151 family is the MP03 machine panel.

**Passive operating panels**

The CP20F is ideal when space is at a premium, whereas the CP30F with Qwerty keyboard offers a high level of user comfort. Both models can be expanded by adding the MP03 machine panel.
**Servodrives:**
Dynamic, precise and available in a wide selection

The comprehensive family of NUM servo drive comprises three series. All have in common the high level of precision, particularly if used in conjunction with the NUM motors.

**NUM HP Drives:**
**Modular**

The technical specifications, powerful functions and modern algorithms predestine the NUM HP drives for HSC as well as for taking on demanding applications.

MDLU3 modules can be optionally equipped with the Safety Monitor Module (SAM). This provides integrated safety functions in accordance with EN954-1 CAT-3.

**MBLD**

The MBLD series combines the power supply and servo drives into a single housing.

In addition to version “R” with regenerative braking, two other versions are available: version “A” with internal or external brake resistance and version “H” with 700 VDC and regenerative braking.

**NUMDrive C:**
**Highest degree of integration**

The latest generation of the NUM servodrives offers tremendous power in the smallest of spaces. Thus, they offer one of the best performance-to-space ratios available and save considerable installation space.

Users can choose not only between single and dual axis units with different current capacity, but can also choose between basic performance (BP) and high performance (HP) control to match their specific requirements. The small footprint and scalable width (a multiple of 50 mm) simplify the cabinet layout. The Safety Monitor Module (SAM) is also available as an option.
In addition to the following listed drives, other versions are available.

### NUM HP Drive

<table>
<thead>
<tr>
<th>NUM Drive</th>
<th>MDLU3034N</th>
<th>MDLU3050N</th>
<th>MDLU3075N</th>
<th>MDLU3100N</th>
<th>MDLU3150N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Current (St) Arms</td>
<td>14</td>
<td>20</td>
<td>35</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>Maximum Current Arms</td>
<td>24</td>
<td>35</td>
<td>53</td>
<td>71</td>
<td>106</td>
</tr>
<tr>
<td>Overall Dimensions mm</td>
<td>80 x 355 x 285</td>
<td>110 x 355 x 285</td>
<td>140 x 355 x 285</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NUMDrive C Mono-Axis

<table>
<thead>
<tr>
<th>NUM Drive</th>
<th>MDLU3014A...</th>
<th>MDLU3021A...</th>
<th>MDLU3034A...</th>
<th>MDLU3050A...</th>
<th>MDLU3075A...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching Frequency kHz</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Rated Current (St) Arms</td>
<td>8.9</td>
<td>6</td>
<td>13</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Maximum Current Arms</td>
<td>10</td>
<td>15</td>
<td>24</td>
<td>35</td>
<td>53</td>
</tr>
<tr>
<td>Overall Dimensions mm</td>
<td>50 x 355 x 206</td>
<td>100 x 355 x 206</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NUMDrive C Bi-Axes

<table>
<thead>
<tr>
<th>NUM Drive</th>
<th>MDLU3014B...</th>
<th>MDLU3021B...</th>
<th>MDLU3050B...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching Frequency kHz</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Rated Current (St) Arms</td>
<td>6.3 + 6.3</td>
<td>4.2 + 4.2</td>
<td>6.3 + 4.2</td>
</tr>
<tr>
<td>Maximum Current Arms</td>
<td>10 + 10</td>
<td>15 + 15</td>
<td>35 + 35</td>
</tr>
<tr>
<td>Overall Dimensions mm</td>
<td>50 x 355 x 206</td>
<td>100 x 355 x 206</td>
<td></td>
</tr>
</tbody>
</table>

### Power Supply

<table>
<thead>
<tr>
<th>PSU, Rated Power (St) kW</th>
<th>15</th>
<th>30</th>
<th>Nennleistung</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSU, Overload Power kW</td>
<td>40</td>
<td>45</td>
<td>(Power Supply for Auxiliary)</td>
</tr>
<tr>
<td>Input Voltage Vrms</td>
<td>400VACrms -10% to 480VACrms+6% 50/60Hz ± 5% 3 phases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Dimensions mm</td>
<td>100 x 355 x 206</td>
<td>50 x 355 x 206</td>
<td></td>
</tr>
</tbody>
</table>

### MBLD All-in-one, R

<table>
<thead>
<tr>
<th>PSU, Rated Power (St) kW</th>
<th>30</th>
<th>39</th>
<th>37</th>
<th>45</th>
<th>62</th>
<th>39</th>
<th>39</th>
<th>39</th>
<th>39</th>
<th>39</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSU, Overload Power kW</td>
<td>400VACrms -10% to 480VACrms+6% 50/60Hz ± 5% 3 phases</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Voltage Vrms</td>
<td>26</td>
<td>40</td>
<td>52</td>
<td>72</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive, Rated Current (St) Arms</td>
<td>35</td>
<td>53</td>
<td>71</td>
<td>106</td>
<td>141</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive, Max. Current (St-S6) Arms</td>
<td>250 x 480 x 285</td>
<td>400 x 600 x 285</td>
<td>400 x 776 x 285</td>
<td></td>
<td></td>
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</tbody>
</table>
Motors:
Perfect Rotation under all Circumstances

The extensive number of motors offered by NUM features an excellent performance-to-weight ratio, to meet the needs of virtually any application. In combination with the NUM drives, these motors offer outstanding stability, even at lower speeds, and can be easily integrated into many different types of machines.

**Brushless Axis Motors**

Compact, with a high power-to-weight ratio, a high speed range and smooth rotation, even at low speeds, they cover continuous torques ranging from 1.1 Nm to 160 Nm.

**Spindle Motors**

The AMS asynchronous motors offer a very wide range of speeds at constant power. In addition, their high stability, even at low speeds, ensures excellent results for C axis and spindle indexing functions. They cover power ratings from 2.2 kW to 36 kW.

**Motorspindle®**

The active parts of the motor are integrated directly in the spindle, thereby ensuring better machine stiffness and more silent operation. NUM also develops Motorspindle motors on request.
NUM Motors – the product line

As well as the standard product described above NUM builds customized motors in order to fulfill the customer requirements. Please contact NUM for information about special and built-in motors.

**Brushless Axis Motors**

**BPH Motors:** axes of machine tools, grinding machines, robotics and special machines.

**BPG Motors:** the same as the BPH motors but with increased inertia and rotor stiffness; for axes with high inertia at the motor shaft.

**BPL Motors:** the same as the BPH motors but for applications requiring very compact motors.

**BHL Motors:** the same as the BPH motors, but specifically designed for large machines. A version with forced convection is available for optimization of size and performance.

<table>
<thead>
<tr>
<th>BPL Motors</th>
<th>Stall Cont. Torque Nm</th>
<th>Rated speed rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPL0751...</td>
<td>1.1</td>
<td>6000</td>
</tr>
<tr>
<td>BPL0753...</td>
<td>2.8</td>
<td>3000</td>
</tr>
<tr>
<td>BPL0951...</td>
<td>5.4</td>
<td>3000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BHL Motors</th>
<th>Stall Cont. Torque Nm</th>
<th>Rated speed rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHL2601...</td>
<td>85, 120</td>
<td>3 000</td>
</tr>
<tr>
<td>BHL2602...</td>
<td>120, 160</td>
<td>2 000</td>
</tr>
</tbody>
</table>
CNC Total Solutions, based on Axium Power

Partnership

The optimum cooperation with our partners in the machine and production industry is based in three development and project concepts, enabling maximum benefit and efficiency of CNC controllers, drives and NUM services.

From Project Support to Project Cooperation
all the way to Total Solution.

NUM offers the right partnership to suit your needs. ProDesign, is the classic form of project support, our specialists and expert consultants support customers and their development department or developers of sub-areas as needed.

CoDesign describes the project cooperation and contains the development of vertical-market or customer together with machine or software manufactures, who bring their specialised expertise into the collaboration.

AllDesign as the name implies, NUM provides total solutions that are developed by our application development teams for specific fields of applications. These are high-end groundbreaking products for demanding requirements. The most prominent example of an AllDesign solution is NUMROTO, the CNC total solution for tool grinding. This software is currently offered by 14 machine manufacturers on about 30 different machines – as convincing argument for tool manufacturers and regrinding specialists, who can then use the same software on different machines. It has been a trendsetter for several years, and its extensive range of functions has been continuously adapted to the changing demands of tool grinding. Together with the excellent support provided, this is the cornerstone of our success.
Totoal Solution for Transfer, Rotary Transfer and Multi-Spindle Machines

In mass production, transfer, rotary transfer and multi-spindle machines must be optimised to the workpiece in order to work in a time-efficient manner. The profitable use of these machines, particularly for small batch sizes and for a large variety of products, requires flexibility and efficient operation that is intuitive and transparent to the user.

The practically-oriented total solution, NUM-transfer, is the result of many years of experience in this field. The Axium Power CNC makes it possible to implement high-end systems with more than 150 interpolating CNC axes and up to 120 positioning axes. The fully configurable user interface NUMpass HMI makes the operation of such complex systems intuitive and simple.

Creative and intelligent solutions

NUM has developed a number of customer and application-specific solutions in many industries. For car makers and their suppliers, these are, for example, CNC systems designed to control tank welding systems, the automation of large metal presses and much more. The entire spectrum ranges from aircraft construction to furniture manufacturing, from turbine construction for power plant construction to complex transfer machines that extend over 100 stations in the clock manufacturing industry. Alternatively, our NUM Retrofits give older machines a new lease on life.

Real-life solutions to real-life problems – always on the right track with NUM.
NUM:  
A European company active on a global scale.

Your specialist for CNC total solutions

- Transfer, rotary-transfer and multispindle machines: NUMtransfer
- Tool grinding: NUMROTO
- Gear hobbing: NUMgear
- 5-axis machining for HSC and mould construction
- Woodworking
- Special machines for the car industry
- Wide range of solutions for machines retrofit

www.num.com