



## HDA 120 – Hardness and Density Automation Test System

**Standards:** [DIN ISO 48](#), [ISO 2781](#), [ISO 1183](#)



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### Description

The [HDA 120](#) test system is a versatile solution for semi-automatic detection of sample hardness and density. The HDA 120 can be fully integrated into existing laboratory systems and processes using a data interface, allowing for the exchange of sample-specific information such as batch, compound, operator, and production date before a series of measurements is started. Ethernet interface in a defined protocol is available to then transmit this data and store it in the PLC.

With the ability to load up to 20 samples, the HDA 120 offers a built-in rotating table for hardness testing with an emphasis on process stability. During the three hardness measurements, samples are securely held on the rotary indexing table by a hold-down, ensuring reliable results even with strongly adhering samples. Learn more about HDA 120 – Hardness and Density Automation Test System in our blog.



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## Hardness and Density Automation Test System Features

- Consists of a built-in rotating table that provides great process stability during measurements and can handle up to 20 samples at a time.
- User-friendly and can be operated via touchscreen and has a pneumatic gripping system for density determinations along with a force ejection mechanism making it a more competitive device in the market.
- Hardness testing optionally with IRHD N (DIN ISO 48-2) or Shore A (DIN ISO 48-4)
- Density measurement according to [ISO 2781](#), DIN EN ISO 1183-1, ASTM D1817
- ISO/IEC 17025 certified



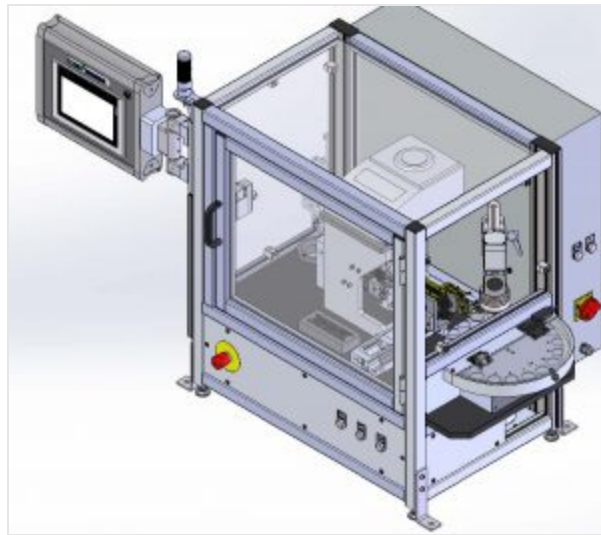
## HDA 120 Input-Output Data

| Category   | Data Point               |
|--|--------------------------|
| <b>Input data</b><br>Which data can be transferred to the HDA? | Operator                 |
|  | Compound Folder          |
|  | Compound                 |
|  | Production Date          |
| <b>Output data</b><br>What data does the HDA provide?          | Sample Counter           |
|  | Operator                 |
|  | Compound Folder          |
|  | Compound                 |
|  | Production Date          |
|  | Hardness 1               |
|  | Hardness 2               |
|  | Hardness 3               |
|  | Timestamp                |
|  | Weight in Air            |
|  | Weight in Water          |
|  | Temperature of the water |
| Density  |                          |



All measurement data, together with the sample-specific information, can be fetched via the interface and processed further in downstream analysis systems. With its wide range of features, the HDA 120 is an ideal choice for those looking for accurate and reliable semi-automatic detection of hardness and density in their samples.

## HDA 120 Sample Operation



The samples are transported to a transfer point by a pneumatic gripping system for the subsequent density determination after the hardness measurement. In order to determine the density, the weight of the sample is first determined in air. Next, the sample is transported with the gripping system to another station and deposited there. A cylinder moves up a container filled with distilled water and immerses the sample completely under water. The water level is checked and, if necessary, corrected for each measurement, and the current water temperature is recorded and taken into account. The cylinder moves the water bath up at least twice to eliminate possible air bubbles. You can also increase the number of weightings in water, which leads to a more accurate result. Further, the density is determined using the highest wet weight.

The gripping system used for the density determination has a forced ejection, which prevents the sample from sticking to the gripper. Once the density has been determined, the sample is picked up and ejected by a separate gripping system, further avoiding any potential



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carryover of water. This gripping system is also equipped with a forced ejector, ensuring that no sample gets stuck.

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## HDA 120 Technical Specifications

| <b>HDA 120 – Hardness and Density Automation Test System</b> |   |
|--|---|
| <b>W x L x H</b>   | 1625 x 825 x 1065mm                               |
| <b>Weight</b>  | ca. 175kg   |
| <b>Impress Protection</b>                                    | IP 21   |
| <b>Power Supply</b>  | 100-240VAC; 50/60Hz; 10A                          |
| <b>Air Pressure</b>  | 4-6bar  |
| <b>Operating Temperature</b>                                 | 23±2°C  |
| <b>Specimen Geometry</b>                                     | ∅ 35-38 mm, d=6 ± 0,5 mm / ∅ 39-42mm, d=6 ± 0,5mm |
| <b>Density range of the samples</b>                          | >1kg/dm <sup>3</sup>                              |
| <b>Number of samples</b>                                     | 20  |
| <b>Communication interface</b>                               | Ethernet  |
| <b>Data communication</b>                                    | Specific Software / Web server                    |
| <b>Data format</b>   | * .csv  |
| <b>Resolution hardness measurement</b>                       | 0,1   |
| <b>Resolution density measurement</b>                        | 0,001kg/dm <sup>3</sup>                           |
| <b>Error analysis of the complete system</b>                 | Value < 1   |