

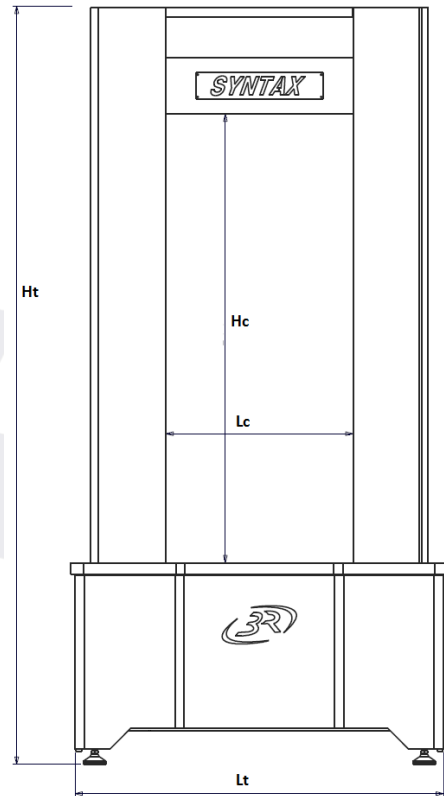
## SYNTAX 300 – UNIVERSAL TESTING MACHINE

*Tensile & Compression Testing Frame*

### OVERVIEW

The **SYNTAX 300** universal testing frame is designed to offer an optimal balance between **high mechanical stiffness, measurement accuracy, and cost efficiency**. Thanks to its compact footprint and robust mechanical architecture, the SYNTAX 300 integrates easily into laboratory and industrial environments while supporting a wide range of mechanical tests and accessories.

Model	SYNTAX 300
Capacity (kN)	300
Frame stiffness (kN/mm)	600
Screw type	Preloaded ball screws
Number of guidance column	0
Number of ball screws	2
Transmission type	Gearbox with reinforced belt
Bearing type	Precharged and waterproof, full life greased
Accuracy (Class) Load Cell Measurement	Class 1 ( $\geq 0.1\%$ FS) / Class 0.5 ( $\geq 0.2\%$ FS) – ISO 7500-1
Crosshead position resolution ( $\mu\text{m}$ )	0,023
Maximum speed, max load (mm/min)	429
Minimum speed ( $\mu\text{m}/\text{min}$ )	1
Crosshead travel (mm) Without load cell and interface	1200 - <b>HA : 1500</b>
Test width (mm)	500
Working area height (mm)	545
Dimensions (W × D × H) mm	1000 × 800 × 2030 - <b>HA : 1000 x 800 x 2350</b>
Weight (kg)	770 - <b>HA : 800</b>
Power supply	400 V Three Phase
Power consumption (W)	4500




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## MECHANICAL FRAME

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**Nominal load capacity:** 300 kN

**Frame stiffness:** 600 kN/mm

**Frame design:** Lateral metallic structure

**Drive system:**

- Oversized preloaded ball screws for high stiffness
- Gearbox with reinforced belt transmission

**Bearings:** Machine-tool grade high-capacity bearings

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## PROTECTION & DESIGN

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2 mm thick sheet-metal housing

Standard screw protection with polyurethane-coated fabric

Front-access design for easy operation, including when mounted on a pedestal

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## ERGONOMICS & WORKING AREA

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**Working height:** 545 mm

**Vertical daylight / stroke:** 1200 mm

**Dimensions (W × D × H):**

- 1000 × 800 × 2030 mm
- +300 mm for HA version

**Machine weight:** 770 kg

**Tooling compatibility:** More than 1300 available tool references

Compatible with thermal chambers and furnaces

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## CONTROLLER & ELECTRONICS

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### CONTROLLER ARCHITECTURE

Remote BlackBox control unit, installed next to the machine

Integrated power and signal management

Compact footprint with full accessibility

Forced ventilation with dust protection filter



## CONTROLLER VERSION

2.5 kHz control loop



## CLOSED-LOOP CONTROL MODES

Force (kN/s)

Stress (MPa/s)

Crosshead displacement (mm/s)

Extensometer displacement (mm/s), multi-extensometer support

Strain (%Lc / %Le per second)

Control mode switching possible during the same test.

## MEASUREMENT CHANNELS & RESOLUTION

Force and position channels + 3 or 7 additional channels

Automatic recognition of connected sensors:

- Force
- Position
- Incremental signals
- Analog ( $\pm 10$  V, 4–20 mA)
- LVDT
- Capacitive
- Magnetostrictive

**ISP – Intelligent Sensor Plug:** automatic sensor identification and setup

### **Resolution (all channels):**

- 10,000,000 digits
- Equivalent to 0.00001% of full scale

### **Force Measurement Performance**

**Force resolution:** 0.00001% of full scale

**Accuracy classes (ISO 7500-1:2016):**

- Class 1 from 0.1% of full scale
- Class 0.5 from 0.2% of full scale

Accuracy depends on the load cell type, brand, and installation

Supports additional force transducers with automatic recognition

## DISPLACEMENT MEASUREMENT

**Crosshead position resolution:** 0.023  $\mu$ m

**Accuracy:** Class 0.2 according to ISO 9513

## ADDITIONAL INTERFACES & EXPANSION

Hydraulic unit control for grips and jaws

Automatic arm extensometer control

Serial interface for mono- or bi-camera video extensometers

Connection to external multi-channel acquisition systems:

- Strain gauge bridges
- LVDT modules
- HBM or equivalent DAQ modules
- Non-contact laser sensors
- Thermocouples
- $\pm 10$  V analog I/O

Control of multi-zone furnaces and thermal enclosures

Video camera connection and test-area recording

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## SAFETY DOORS / SHIELDS (OPTIONAL)

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The machine can be supplied without safety doors, subject to :

- Formal acknowledgement of Directive 2006/42/EC
- A documented risk analysis related to the intended use
- Acceptance of responsibility for operator and environmental safety



Commitment to perform a new risk assessment if test methods or applications change