Besmak BMT - E Series
20 kN Servo – Electromechanical Universal Glass Testing Machine

TECHNICAL FEATURES:

Maximum Load Capacity:	**≥ ±20 kN**
Frame Type :	Rigid frame in wall type construction.
Electronic Unit:	New generation EDC Electronic Control Unit with 1kHz (1000 data/sec) data acquisition and control system
Control:	1) Servo Electromechanical System 2) Besmak Universal Testing Software
Software	SEMATRON software used on PC
Applications	Besmak Universal Test Software allows load, displacement and strain control. It is suitable for tests such as tensile, compression, bending, short-term creep, stress relaxation as well as repeated loading. These tests can be done with attachable fixtures. - TS EN 1279-4; Filling Material Control Glazing (Linear Incremental) - TS EN 1279-6; Glass Pull (Constant Load) - TS EN 1279-6; Lath Pulling - EN 1288; It can also perform the 4-Point Compression-Bending test with the support of the relevant apparatus. In accordance with the above standards; You can perform the -Strength test on tempered glasses -Pull & wait and Pull & break test between two glasses -Pull & wait and Pull & break test between two laths.
Sensitivity	Class 0.5 according to ISO 7500-1
Resolution	24 bit
Displacement Resolution:	0,001 mm (with internal encoder)
Dimensions (Length x Width x Height):	755 x 1550 x 2540 mm
Power Requirement:	220 or 380 Volt, 50/60Hz

FEATURES:

BESMAK BMT-E series 20 kN Servo Electromechanical Universal Glass Testing Machine, designed with rigid frame in wall type construction. It is equipped with highly precise and highly efficient AC servo motor – servo driver, gapless electromechanical drive system and BESMAK electronic control unit, does not require hydraulic oil, has low maintenance costs and is environmentally friendly system. The system, which is electromechanical motor driven and software controlled via computer, includes the frame, electronics and control unit.

Thanks to its universal structure, BMT-E Series Servo Electromechanical Glass Testing Devices can perform all of the tensile, compression and bending applications with high precision and stability. Both special and standard test accessories can be integrated for many different applications. Thanks to this structure, the Universal Electromechanical Tester can be used in automotive, defense and aerospace, medical, iron - steel, building materials, etc. It is in a structure to meet the basic universal physical testing needs of many sectors. It is easy to use and functional.

With its walled type highly rigid structure that sits on the ground, it meets the requirements of many applications like tensile, compression, bending, cyclic loadings etc., Built for high precision and durability, these test systems offer extensive testing flexibility for users to meet changing requirements. It is also designed with features that increase testing efficiency and enhance the testing experience for the operator.

- It meets the requirements of all national and international standards; Complies with ISO, ASTM, BS, DIN, EN and AFNOR standards,
- Comfortable working height and ergonomic control structure that increases user productivity and comfort,
- The electronic control unit, which has more than one emergency stop I/O configuration, is suitable for connecting many emergency stop buttons. For this reason, in order to ensure that the operator can intervene quickly in case of emergencies, regardless of which side of the device operator is located; there is at least 1 emergency stop button on the device.
- Thousands of accessories that meet testing requirements of any application or industry: biomedical, automotive, electronics, plastic, glass, metal, composite, elastomer, aerospace, textile and many more,
- It has real-time data display, multi-functional, smart keypad and sample protection infrastructure and smart control console (optional) for enhanced use and productivity.

Load Measurement:

Universal, high-precision load cells are used for perfect measurement and control in Besmak BMT - 20E Servo Electromechanical Universal Glass Testers. In addition to the standard load cell provided according to the device capacity based on user demand, load cells with different capacities specific to the applications can be offered with the device.

Besmak LC Series Load Cells;

- High precision, Nickel Plated, Alloy Steel body structure,
- Low profile structure and mid-measurement feature,
- It has a universal structure and is suitable for tensile and compression directions,
- Robust structure against overloads,
- Easy adaptation to BESMAK brand products and other well-known brands thanks to its socketed structure,
- Output signal at full capacity of the load cell is 2±0.01 mV/V,
- The load cell operates at a temperature of -35^{o} C – 85^{o}C,
- Safe load value up to 150% of the maximum capacity,
- High measurement resolution,
- The load cell has a capacity of ±20 kN and a sensitivity of class 0.5 and better according to the ISO 7500-1 standard.
- Thanks to its ergonomic structure, it can be easily disassembled and mounted.

Applied Standards:

- It is suitable for glass test applications in accordance with EN 1288-3, 1863-1, 12150-1 and many other standards. Experiments can be carried out in appropriate standards by connecting the device with different tensile and compression apparatus.

ELECTRONIC CONTROL SYSTEM:

BESMAK BMT-E series 20 kN Servo Electromechanical Universal Glass Testing Machine is controlled by "**New generation SEMATRON Electronic Control Unit**". Sematron electronic control system is world's one of the sensitive electronic control system. It controls hydraulic and/or electromechanical systems by closed-loop control method. Sematron Controller has a wide usage area in high technology test machines.

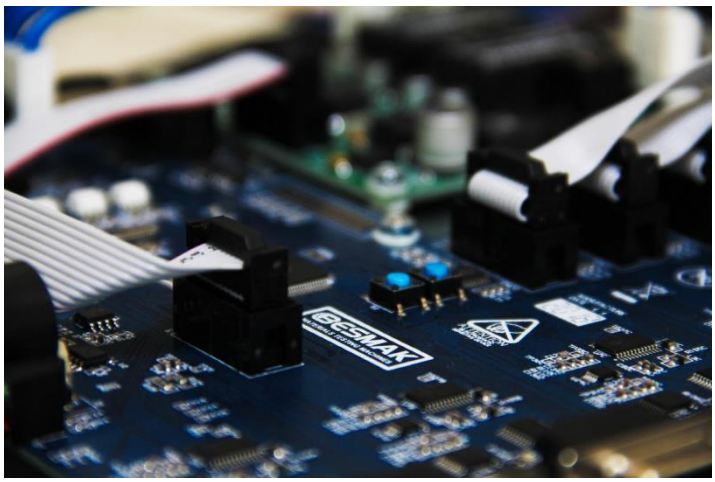
Test can be done with both load and displacement/deformation control mode with closed loop control technology. With displacement/deformation control, user can obtain much more accurate and sensitive readings. Load at failure, strain at failure, max load, max strain, etc. can be obtained real-time at 1 kHz (1000 data/sec).

The electronic control unit has 6 internal, 1 RS232-485 and 1 debug channels and is suitable for controlling up to 6 sensors and has 5 channels. It can control each of the sensors connected to the electronic control unit separately at a data rate of 1000Hz (1kHz). Thanks to the New Generation Electronic I/O Bus Terminal infrastructure, all sensors (extensometer, load cell, LVDTs, etc.) connected to the electronic control unit are automatically recognized by the system, their limits are automatically detected and their automatic calibrations can be performed. Besides this feature, the system also allows manual calibration of third party sensors. The sensor measurement resolution of the electronic control unit is 24 Bit.

Debug channel enables more than one electronic control unit of the same brand to communicate with each other and to control the system synchronously. Connected, communicating with debug channel electronic control units can control the simultaneous synchronous test or movements of multi-system test systems by working with the master-slave algorithm. Besides, electronic optional channels of the control unit, which can be added upon request, are capable of operating "video extensometer, laser extensometer, LVDT, strain gauge, load cell and position sensor".

The adaptation of the electronic control unit to the test system is done with sensor sockets (eeprom) containing special electronic cards in order to store stable and connected sensor data on a sensor basis.

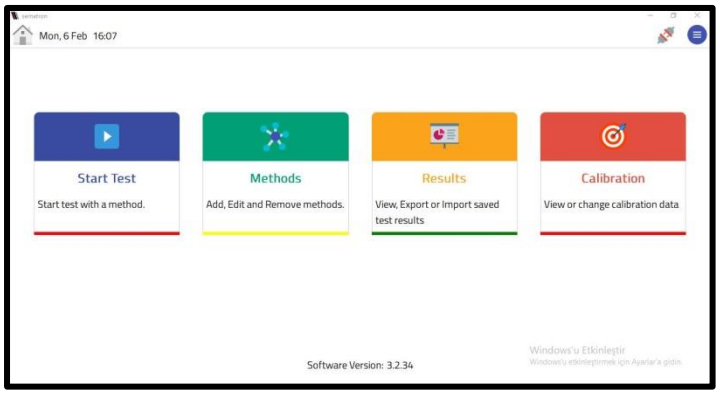
Sensors (load, displacement meters, etc.) are connected to the control unit with Eeprom, it can keep all calibration data and linearization coefficients in its memory, even if the control unit is changed, there is no data loss. There is a physical electronic safety button on the sensor sockets to change or print the adjustment and calibration data. The communication of the electronic control unit with the computer or software is done via Lan (Ethernet) and Usb ports, depending on the user's request.

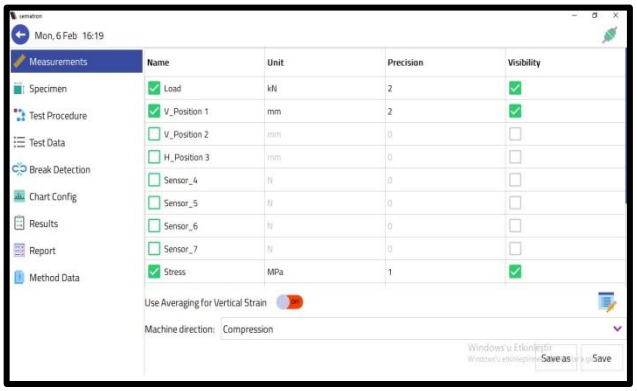


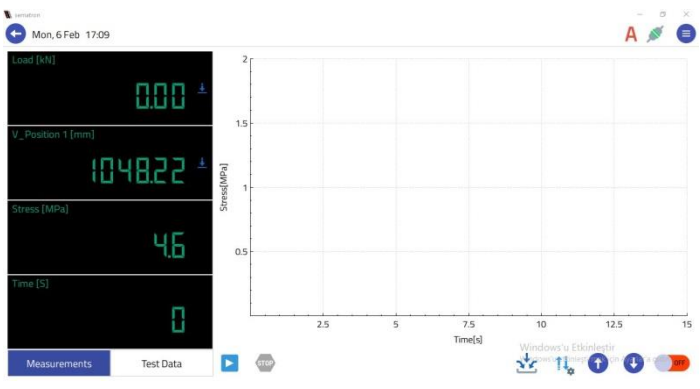
In addition, the control unit has the ability to connect an external air conditioning and/or heating cabinet.

BESMAK UNIVERSAL TESTING SOFTWARE:

Tests can be carried out on computer by Besmak Universal Testing Software. Real time data, test graphs and results can be observed on software. Results and graphs can be saved on computer and printed. User can personalize the software and report format according to company/corporation etc. Universal Testing Software provides solutions to all type of test applications.







FIXTURES:

Besmak BMT-E Series test devices and all accessories are suitable for integrated and synchronized operation, increase user efficiency, productivity and functionality, and are designed suitable for tensile, compression and bending tests. The stiffness loss of the system and its accessories is minimal. With test systems, hundreds of accessories can be selected and integrated into the system, depending on test standards or user demands.

Bending Test Apparatus:

A 3-point and 4-point bending test accessory is supplied with the device. The edges of this test accessory that come into contact with the specimen have a diameter of 30 mm. In addition, the distance between the sub-plate supports can be adjusted up to 1100 mm. (It can be changed according to user demand.)

Mechanical Jaw System: (optional)

A C type tensile jaw with a capacity of 2 kN is supplied with the device. It conforms to EN 1279-4 standard is supplied with the device.