# EDT-A

# Electrodynamic testing machine

# 1. Introduction

Electrodynamic testing machine is mainly used for testing the dynamic and static mechanical properties of small metals, non-metallic materials and parts, elastomers and shock absorbers. It can realize sine wave, triangle wave, square wave and so on. Different fixtures can be used for mechanical tests such as pulling, pressing and pulling. Additional environmental test devices can be configured to complete environmental simulation tests under high temperature, low temperature, salt spray and corrosion.

The testing machine is composed of an electric controller, an electric cylinder, a load sensor, a displacement sensor, a drawing gauge and a computer to form a moving closed-loop control system to achieve automatic and accurate control of the test process, and automatic measurement of test force, displacement, deformation and other test parameters. The test process is all controlled by computer, which is an ideal cost-effective test system for scientific research institutes, metallurgical construction, national defense, colleges and universities, machinery manufacturing, transportation and other industries.

# 2. Parameters

| Name | Description | | | |
|---|---|---|---|---|
| Maximum static force (kN) | 5 | 10 | 20 | 25 |
| Maximum dynamic force (kN) | ±5 | ±10 | ±20 | ±25 |
| Force measurement range (kN) | 2%~100%FS | | | |
| Force reading accuracy | 0.5% | | | |
| Actuator travel (mm) | 100 | | | |
| Displacement measurement range (mm) | 0~100(±50) | | | |
| Displacement measurement resolution | 0.001 | | | |
| Displacement measurement accuracy | 0.5% | | | |
| Test frequency (Hz) | 0.01~10 | | | |
| Waveform | Sine wave, triangle wave, square wave, etc | | | |
| Temperature range (℃) | -40～150 | | | |
| Vertical space (mm)<br>(distance between upper and lower grip) | 400 | | | |
| Distance between columns (mm) | 520 | | | |
| Machine size (mm) | 810×720×2180 | | | |
| Weight (kg) | 450 | | | |
| Total power consumption (kW) | 7 | | | |

## Amplitude-frequency

| Frequency Hz | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Amplitude ±mm | 20.00 | 10.00 | 6.66 | 5.00 | 4.00 | 3.33 | 2.86 | 2.50 | 2.22 | 2.00 |

## 3. Standard accessories

| No. | Name | Description | QTY | Unit | Brand |
|---|---|---|---|---|---|
| **1** | **Main machine** | | | | |
| 1.1 | Frame | Upper-seated actuator<br>T-slot table lower-seated | 1 | Set | WANCE |
| 1.2 | Spoke-type load cell | 300%FS overload | 1 | Set | Interface/TOVEY USA |
| **2** | **Electro-cylinder** | | | | |
| 2.1 | Servo motor | 6kW | 1 | Set | Panasonic |
| 2.2 | Electric cylinder | travel 100mm | 1 | Set | Bitpass Shanghai |
| **3** | **Controls, software** | | | | |
| 3.1 | Control cabinet | Integrated vertical control cabinet | 1 | Set | Toten |
| 3.2 | EDC i50 controller | Imported full digital closed loop electrical system | 1 | Set | DOLI Germany |
| 3.3 | Computer | Brand: Lenovo, CPU: i7, RAM: 16G, HDD: 1T, display: 23.8” | 1 | Set | ADVANTECH |
| 3.4 | Monitor | 19” LCD touch display | 1 | Set | NODKA |
| 3.5 | Test software | TestPilot | 1 | Set | WANCE |
| **4** | **Accessories** | | | | |
| 4.1 | Wedge tensile grip | | 1 | Set | WANCE |
| 4.2 | Took kits | A flat-head screwdriver and a Phillips screwdriver;<br>1 set of inner hexagon wrench, 2 rigid hands | 1 | Set | WANCE |
| 4.3 | Quality certificate | | 1 | set | WANCE |
| 4.4 | Manual | | 1 | set | WANCE |

# 4. Description

## 4.1 Frame

The frame adopts a closed-type structure, and the outer surface of the double column is treated with hard chromium electroplating. Upper-seated servo actuator and lower-seated T-slot ensures strong flexibility.

1. The frame is a closed T-table frame structure, the frame stiffness is large, no reverse clearance, good stability;

2. The bottom t-shaped table has high strength and expansibility, and test fixtures can be installed to achieve static and dynamic fatigue mechanical testing of various standard specimens. Also can directly install all kinds of parts and structural parts, dynamic and static mechanical testing;

3. Servo actuator mounted, double-acting non-contact servo motor, with compact structure, small volume, no lubricating oil and hydraulic oil, clean environment, no noise, maintenance-free and other advantages;

4. The up and down movement of the beam is electrically adjusted to meet the mechanical test of different kinds of specimens.

**Electric cylinder assembly：** The electric cylinder is the power mechanism for loading the sample, and the ball screw is driven by the servo motor to form a linear push/pull. Parameters:

- Maximum test force: ±10kN
- Stroke: 100mm
- Servo motor power: 6kW

Servo motor brand: Panasonic, Japan

- Electric cylinder brand: Shanghai Bitpass

**Load cell**

- Brand: American Interface or Tovey
- Structure: fatigue level spoke type
- Specifications: ±10kN
- Nonlinearity: ±0.05%FS
- Hysteresis: ±0.05%FS
- Repeatability: ±0.05%FS
- Sensitivity: 2mV/V
- Safety overload: 300%FS

## 4.2 Control from DOLI

EDC I50 digital servo controller is a new generation of high-performance dynamic controller developed by German DOLI company in 2017, which is much more advanced than EDC580, EDC580V and other controllers. EDC I50 is positioned as the innovative replacement of EDC580 series by German DOLI. With the international leading level.


## 4.3 Universal digital measurement and control electronics

- **Up to 10 kHz**
- **Up to 3 iSI modules (X21 – X23)**
- **Supply voltages**
  Tabletop device: 100 – 240 VAC, 50/60 Hz
  Built-in device: + 24 VDC
- SGS ID:
  Automatic sensor recognition through intelligent sensor plug SGS
- Universal digital IO interface, connection for 8 digital inputs and 8 digital outputs, 24V DC
- Machine control, control output analog ± 10 V or various digital interfaces
- Connection for display / operating unit Remote Machine Control RMCi with emergency stop option
- Connection for incremental digital sensors, e.g. for position measurement
- iSYNC interface for multi-axis applications. Connection of several EDCi. (optional – only for table-top device)
- USB host for USB sticks
- Analog input amplifier (e.g. for strain gauges) with DC supply with a resolution of 20,000,000 steps
- Output e.g. for DC motors with 160W or 320W power (optional)
- oder zur Ansteuerung von Servoventilen bei der SV-Version (optional)
- ‘+/- 10V (optional)
- Ethernet RJ45, communication with PC. 10/100Mbit
- USB 2.0, communication with PC

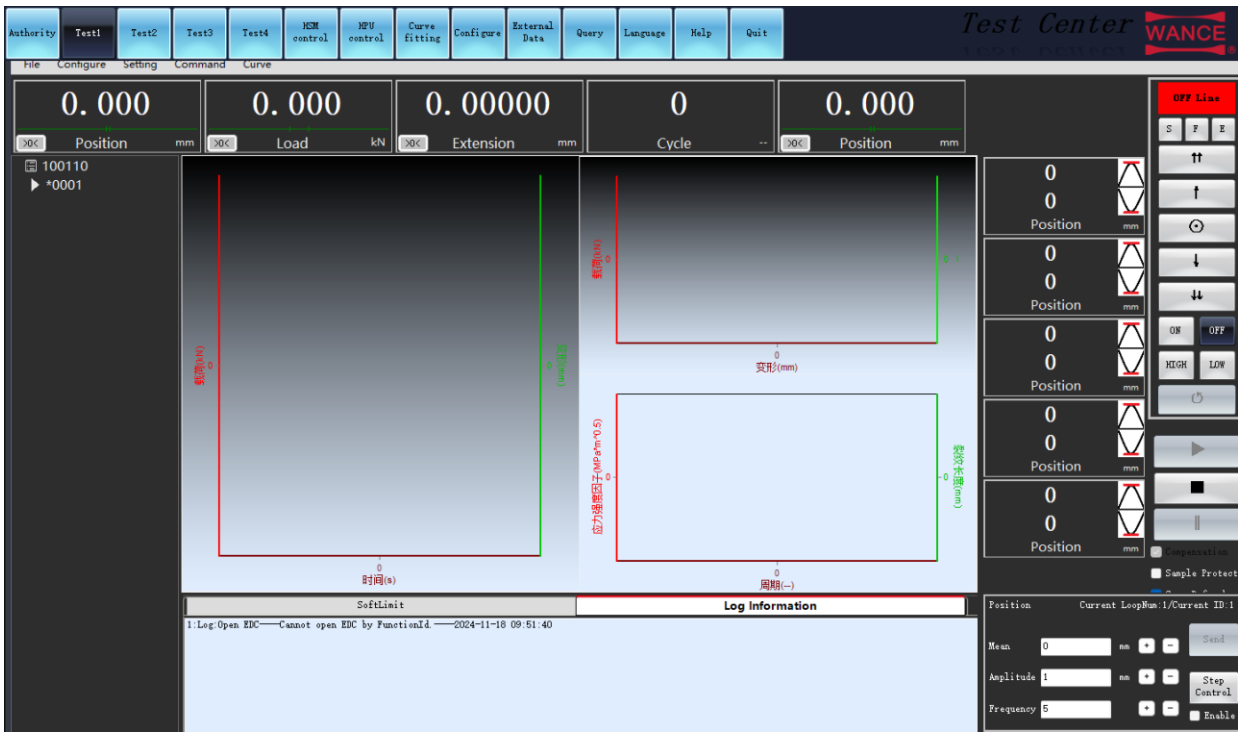
- Serial interface for external electronics (optional)
- Configuration and parameterization with the DOLI Installation Center PC software
- Software for operation:
  Control and test execution with application software DOLI Test & MotionPlus or your own application software via DOLI DoPE API

## 4.4 Test software

**Test software (English version is available)**

The test software is developed independently according to the actual application of users, with powerful functions and simple operation. Set equipment configuration, test scheme, test process, multi-channel data (curve) display, historical data query, report output and other functions; For multi-stage combined waveform loading, irregular waveform loading, overlay waveform loading and other complex test users can set free.

- Software support test personnel permission setting;
- The software supports multi-axis (synchronous) control of the equipment with multiple actuating cylinders;
- Software support PLC communication, the oil source, cooling device and other transport control;
- Software support query historical data, curves, results;
- Software support data analysis, such as fitting calculation/curve;
- The software supports a variety of test control, can achieve dynamic, static, sweep frequency, superposition, displacement control force target operation;
- Software supports multi-stage control of custom operating parameters;
- Software support custom style nameplate parameters;
- Software support custom formula editing;
- Software support custom test data, can expand 14 channels of data;
- Software support multi-curve interface, convenient to observe the test state in the test;
- The software supports logging, recording each operation and error information of the user.




## 5. Preparations by users before equipment delivery

### 5.1 Electricity

Electricity: equipment placement laboratory shall be equipped with A power distribution cabinet, the total power of equipment is 7kW, the total current is 16.8A, three-phase five-wire system, good grounding; The wiring from the power distribution cabinet to the equipment shall be the responsibility of the supplier:

### 5.2 Foundation

No need

## 6. Delivery and after-sales services

### 6.1 Delivery

Supplier to provide transportation and insurance

### 6.2 Onsite installation and commissioning (optional)

The user is responsible for unloading the equipment, and the supplier is responsible for installation.

The equipment is commissioned by the supplier to meet the technical specifications required by the agreement and pass user acceptance. The warranty period shall be calculated from the date when the user signs and receives the acceptance report.