

BREAKER TEST SYSTEM BTS2000



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BTS2000

Every breaker manufacturer needs to test their breakers in order to ensure the functionality of their products. But they also need to follow established standards, customer demands and of course also be able adapt their end testing to new products.

To stay ahead, the test equipment needs not only to be as accurate and as effective as possible, but also extremely reliable.

The BTS2000 was developed to make all this a reality.

Some of the main features:

- You get a complete system with necessary Hardware, System Software, Support and Education.
- Compability. Transfer all necessary test-data to our field test unit SA10 for service and commissioning tests.
- Reliability, The BTS2000 Equipment is used by top companies all over the world.
- Flexibility. Customize the equipment to fit your end testing requirements.
- The test procedure can be fully automatic or partially automatic.
- System software (BTS11) is included.
- All support that does not require hardware or software changes is free!!!
- Get your own webpage with easy access to circuit breaker data wherever the user is located. For free!

Your No. 1 partner in breaker test equipment

For breaker manufacturer end testing of high and medium voltage circuit breakers



BTS2000

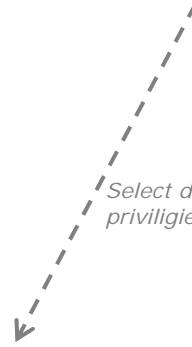
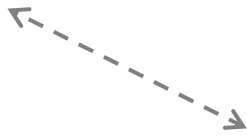
Use a test equipment that is customized to fit your specific requirements for routine testing and type testing.

Only set up all parameters one time.



Create:
CB data, Test data,
Test plans, Test reports etc.

Select different software privileges for your staff.

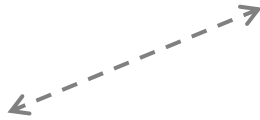


Existing or dedicated server

Use you existing company network to store and distribute: CB data, Test data, Test plans, Test-reports etc.

Supervise

Approve, monitor and control independently.



Test reports.

The customer can review and sign the test report digitally.

Service or commissioning in field with the SA10

Let the field operator have very easy access To all necessary data in order to perform required tests.



Our common goal: A satisfied customer

System software **BTS11**

Test program **BTS11**

For complete testing of the circuit breakers, the analyzing software **BTS11** is used. The software is delivered together with the **BTS2000**. This software is used for Elcons field test equipments as well as factory end test equipments. Data between the two different systems can easily be imported/exported.

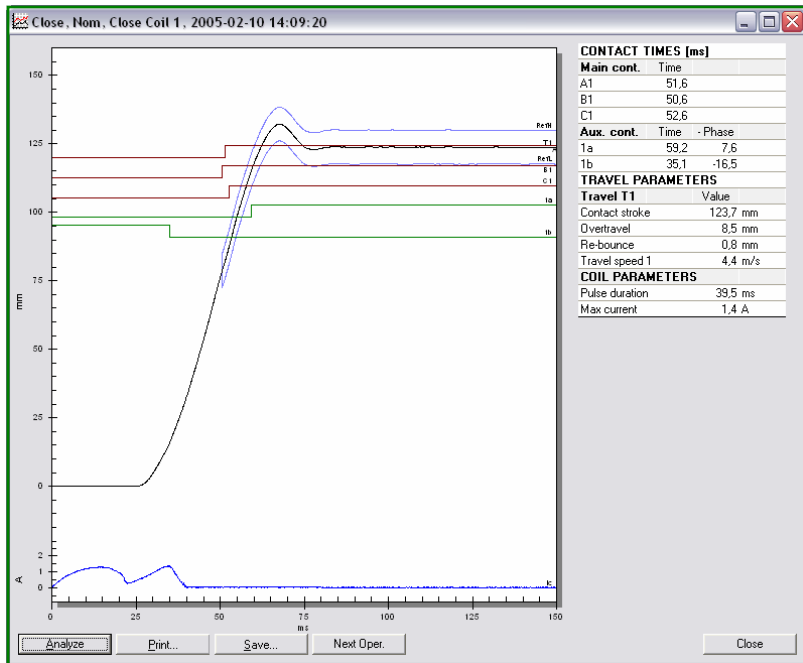
To test circuit breakers in general is to operate the breaker and check the contact timing. However in factory testing and at field service some other tests are necessary. For field testing these other tests can also be very useful in diagnostics purpose.

Common operation tests, can be done, with result timing diagrams for up to three phases each with one travel curve, up to twelve contact curves and a common coil current curve. All common tests are performed and evaluated according to established industrial standard. A new test, mainly for field diagnostic, is to take dynamic resistance test curves of an operating main contact. However at this time this test is only for manual evaluation. A spring tension motor test, with current timing diagram is also Included.

Some **BTS11** features:

- Simple operating control function for all possible tests.
- Quick test. No settings needed.
- Fully automatic test sequences (by choice).
- Test guides for new tests and test objects.
- Curve analyzing window with many possibilities and tools.
- Data analyzing function with limit supervision and possibilities to do comparison with a previous test. (reference characteristics **IEC62271-100**).
- Possibility to customize any operation in order to adapt the software to any type of breaker.
- Statistics analyzing.
- SQL or Access database with several users and user-levels.
- Import and export test data.
- Automatic unit conversion
- Test against function values (measurement limits).
- Set up your own test profile
- Attach pictures or reference documents to assist the user.

Features and testing possibilities



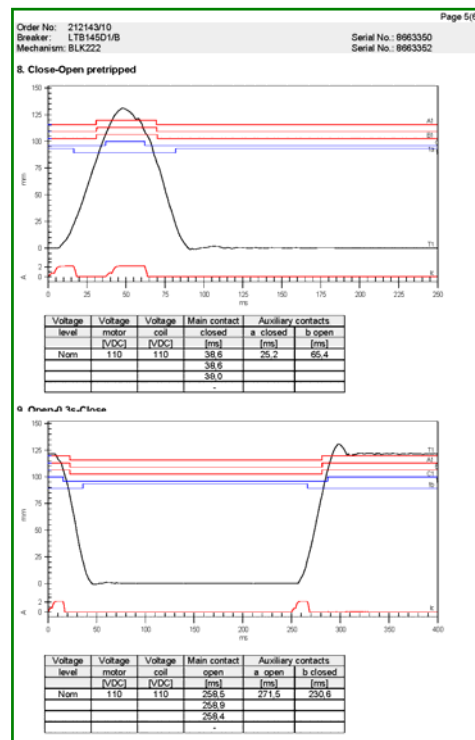
Possible Operations

- Close
- Open
- O-C, C-O, O-C-O
- Any combination of the close and open operations
- Min function coil voltage
- Spring charge
- Slip coupling
- Damping curve
- Static resistance
- Dynamic resistance
- Test of Disconnectors
- Pre-insertion resistors
- User customized operations
(ex: for long mid- voltage CB sequences)

Close Operation with reference band According to IEC 62271-11

Other testing possibilities and features

- Up to three mechanisms with up to 12 contact elements per phase.
- Set up your own test sequence
- Define the trig conditions. Contact, coil, travel or analogue trig.
- Choose sampling rate. Up to 50 kHz.
- Up to three analogue and/or digital transducers used simultaneously.
- Complete curve customizability. Colour, visibility, filled or regular, scale, etc.
- Easy functions/guides for calibration.



Extract from Protocol

Protocol features

- Create your own test report printouts using MS word. Multi lingual.
- Extensive protocol functions to meet any customers demands.
- Digital signing options.
- Automatic compressing and preparing protocols for email or web-publishing

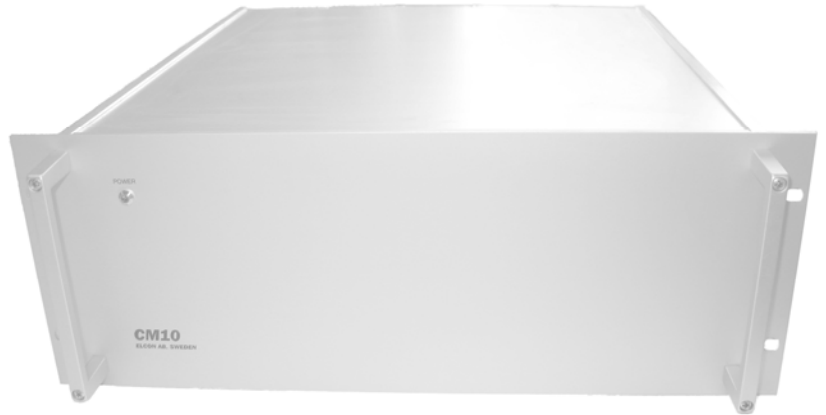
Breaker Test System BTS2000

BTS2000 Hardware

The Hardware consists of separate units mounted into a standard 19" control cubical. What units to be mounted depends on the requirements and what type of breakers are going to be tested. Important to know is that the system is expandable and subject to easy adaptation. Some basic sets of the most commonly used configuration of BTS2000 is described on the back of this leaflet.

CM10 Control Unit (ArtNo L1200)

The control unit CM10 is a microprocessor-controlled unit used for control of external devices and data acquisition of contacts and transducers. The control unit performed specified tasks by software commands from the PC. It is connected to the PC by a serial communication link, type RS232.



Contact inputs

Quantity:	36 (expandable)
Screw terminal:	X1 – X6
Measure voltage:	12 VDC
Measure current:	10 mA
Isolation to earth:	400 VDC
Isolation between inputs:	400 VDC

Analogue inputs

Quantity:	8 (expandable)
Screw terminal:	X7 and X8
Range:	$\pm 0.1V$, $\pm 1V$, $\pm 10V$
Accuracy:	$\pm 0.1\%$ of range
Isolation to earth:	400 VDC
Isolation between inputs:	400 VDC

Communication ports

Quantity:	6
Type:	RS-232

Digital I/O

Quantity:	16 (expandable)
Voltage:	24VDC

High current output (option)

Quantity:	1
Pole screws:	100 - 200A
Output current	100 - 200 A during 100 ms
Resistance range:	10—1000 μohm
Accuracy:	$\pm 1 \mu\text{ohm}$

Inputs for travel transducers

Type:	incremental encoder & analogue transducers
Quantity:	3 of each type (expandable)

Data acquisition

Sampling rate:	up to 50kHz
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IU20 (ArtNo L1230)

The Interface unit consists of functions to distribute voltage from the power supplies, such as coil motor and auxiliary voltage. Also it has an integrated security circuit that allows for connection of security switches around the testing area.

Relay functions for required signals is also provided.

The interface unit also distributes voltage to the units mounted in the BTS2000 cabinet. The Power supply for the equipment is 3x400VAC+N+PE.

PU1001/PD1001 Power Unit (ArtNo L1250/1240)

PU1001 is a combined AC/DC power unit specially designed for testing of circuit breakers. PD1001 is for DC supply only. They are able to withstand high current peaks and intermittent overloads. Four separate outputs, of which one is directly connected to the output circuits and the other three are connected via electronic trigger devices, are available (Can be expanded to eight). The trigger outputs are intended for coil supply and the direct output is for motor supply. The AC voltage output is of low drop transformer type. The DC output is of high capacitance type and can supply peaks of several kilo amperes, because of that the trigger device outputs are internally current limited to protect themselves. An interlock function is also included.

Main data PU1001:

Continues power out	≤ 1000 VA *
Continues current out	≤ 12 A *
Voltage range	10 – 300 V
Regulation at ratings DC	< ±1 V
Regulation at ratings AC	< 150 ms, to within ± 2 V
Trig device current limit	> 25 A
Input power	230 VAC , 10 At

*Intermittent power out can be considerable higher.

Main data PD1001:

Continues power out	≤ 1000 VA *
Continues current out	≤ 16 A *
Voltage range	10 – 300 V
Regulation at ratings DC	< ±1 V
Trig device current limit	> 25 A
Input power	230 VAC , 10 At

*Intermittent power out can be considerable higher.



PU3001 Power unit (ArtNo L1260)

PU3001 is a power unit specially designed for motor feeding in testing of circuit breakers. It is able to withstand high current peaks and intermittent overloads. The output is of low drop transformer type. An interlock function is also included.

Main data:

Continues power out	≤ 3000 VA*
Continues current out	≤ 30 A*
Voltage range	10 – 300 VAC/DC
Regulation transformer speed	20V/sec
Regulation at ratings	≤ 250 ms, to within ± 2 V
Input power	3*400 VAC +N +PE, Fuse 32 At

* Intermittent power out can be considerable higher.

BREAKER TEST SYSTEM BTS2000

#L1000 Complete Factory end testing Equipment for medium voltage circuit breakers.

Description	ArtNo
Control unit CM10	L1200
Interface Unit IU20	L1230
Power Unit PU1001 (x2) <i>(One for coils and one for motor)</i>	L1250
Control cabinet 19"	L1270

#L1020 Complete Factory end testing Equipment for high voltage circuit breakers.

Description	ArtNo
Control unit CM10	L1200
Interface Unit IU20	L1230
Power Unit PD1001 <i>(Used for coils)</i>	L1240
Power Unit PU3001 <i>(Used for motor)</i>	L1260
Control cabinet 19"	L1270

#L1030 Complete Factory end testing Equipment for high voltage circuit breakers.

Description	ArtNo
Control unit CM10	L1200
Interface Unit IU20	L1230
Power Unit PD1001(x2) <i>(Used for coils)</i>	L1240
Power Unit PU3001 <i>(Used for motor)</i>	L1260
Control cabinet 19"	L1270

#L1040 Complete Factory end testing Equipment for high voltage circuit breakers.

Description	ArtNo
Control unit CM10	L1200
Interface Unit IU20	L1230
Power Unit PU1001(x2) <i>(Used for coils)</i>	L1250
Power Unit PU3001 <i>(Used for motor)</i>	L1260
Control cabinet 19"	L1270

- BTS200 can be fully customized to fit your requirements (including the software).
- Auxiliary voltage can be selected from any power unit.
- Connection kits are also available.

We have the best Equipments and the best prices on the market. Contact us for a quotation:

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"Your No 1 partner in breaker test equipment"

Please note! Elcon International is working continuously to improve our products. We therefore reserve the right to change designs, dimensions and data without prior notice.

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