Infeed Test System

TYPE I-TS-3870 & TYPE MI-TS-3871
Infeed Test System – Type I-TS-3870

General Data:
- Power single system up to 500 kW
- Total power parallel system up to 1,0 MW
- Output voltage single system up to 1000 V
- Output current single system up to 1000 A (higher output current on request)

Typical applications:
- Battery simulation (BS)
- Battery test (BT)
- Testing fuel cell
- Testing solar panels

Applications (depending on configuration)

Infeed Test System – Type I-TS-3870:
- Test of battery charging and discharging
- Load for fuel cells (with safety function)
- Power supply and power deduction of powertrain
- Testing power supply for fuses, contactors and MCCB
- Test of DC-motors

Multi-Channel-Infeed-Test-System – Type MI-TS-3871
- Up to 4 individual controllable DC-outputs
- Up to 1000 VDC 1000 ADC

Subject to change without notice (tech)
### Types / Technical data

<table>
<thead>
<tr>
<th>Typ</th>
<th>Rated power (kW)</th>
<th>DC Voltage (V)</th>
<th>DC-Current (A)</th>
<th>Typical current rise time 10 % - 90 % (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-TS-3670-300</td>
<td>60-120</td>
<td>5-300</td>
<td>200-1000</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>I-TS-3670-600</td>
<td>100-500</td>
<td>5-600</td>
<td>200-1000</td>
<td>&lt; 1</td>
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<tr>
<td>I-TS-3670-800</td>
<td>100-500</td>
<td>5-800</td>
<td>200-1000</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>I-TS-3670-1000</td>
<td>100-500</td>
<td>5-1000</td>
<td>200-1000</td>
<td>&lt; 1,3</td>
</tr>
</tbody>
</table>

### Characteristics and basic equipment

- „Battery tester“ version
- Highly dynamic inverter
- Short circuit proof < 3 kA, < 8 kA at 1000 A systems
- Electrical isolation to grid
- Control accuracy 0.1 % fs
- Voltage ripple 0.1 % fs
- DC current measurement with 0.1 % fs accuracy
- Current rise time < 1 msec (300 - 800 V), < 1.3 msec (1000 V)
- Seamless transition source/sink
- Main switch (switch disconnector with fuses in the AC input; lockable in Off-Position)
- Safety control for Performance Level d (PLd) in accordance with ISO 13849-1 / EN 60204-1
- TFT display with touch operation
- Stop button (black mushroom button) in cabinet door
- Voltmeter and ready indicator light in cabinet door
- DC output contactor
- Connection terminals for DC voltage measurement (0.1 % fs accuracy with sense lines)
- Connection terminals for external „Emergency Stop“
- Connection terminals for external „Stop“
- Connection terminals for calibrating case
- Interface MOD-bus / TCP-IP
- Interface CAN-bus (-100 Hz with dbc file)
- Interface VNC over Ethernet
- Protection type IP20
- Air cooled
- High efficiency
- Noise-reduced version (rubber buffer, fan control)

#### Version „Battery simulator“

**I-TS, 800 V DC, 600 A**

- Small voltage dip at load step
  - Setting: constant voltage
  - Max. accepted deviation of voltage at load step 0-100 % in 3 msec: 1 % fs = 8 V
  - Measuring of transient voltage deviation and control settling time

#### Version „Battery tester“

**I-TS, 1000 V DC, 1000 A, 100 kW**

- Small current rise time
  - Output voltage 80 V DC
  - Changing setpoint for current from - 1000 A to + 1000 A
  - Measuring of current rise time (- 900 A to + 900 A) = 1.2 msec

Subject to change without notice (tech)

* Standard 400 V
Interface

High Speed Analogue / Controlling

Ethernet / Diagnosis and Debugging

Analogue / Controlling

Profibus / Controlling

Ethernet / Controlling

CAN-Bus / Controlling

Parallel-Operation

Performance level „d“ (machine directive: EN ISO 13849-1)

- Redundant Hardware
- Redundant wiring
- Two separate channels
- Constant test of inputs and outputs
- Safe shutdown in case of error

Internal recycling of energy during test procedure

LionTrace
Software Add-On

LionTrace is a software add-on for test automation. The creation of test scenarios, automated procedures, remote access and the export of measurement data demonstrate just a brief glance of the added values that LionTrace offers to you.

The live display of measurement data and the intuitive user interface of LionTrace helps users to easily create, edit, execute, manage, and evaluate complex test scenarios and procedures.

Generator

Controller

Torque
Using batteries to increase max. power

250 kW from grid
1 MW
1000 V / 1000 A

1 MW
Testobject (DUT)

1000 kW for DUT
1000 V / 1000 A

750 kW

Backup for charging stations

250...500 kW
1000 V / 1000 A

1000 V / 1000 A

DC application: EVSE Test (DC EV Simulation)

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DC EVSE by customer

Fault Injection
Analyzer / Simulator
DC Power measurement
Connector Box

comemso
your partner for complex embedded solutions

DC EVSE by customer

Fault Injection
Analyzer / Simulator
DC Power measurement
Connector Box

comemso
your partner for complex embedded solutions

XX MWh
fuel cell
redox flow

Charging Post
Control Unit

V_Battery

Charging Post
Control Unit

V_Battery

Charging Post
Control Unit

V_Battery

EV by customer

Different charging cables
A discharge unit always assumes a PDSB. From a rectifier output > 250 kW, two DCUs are installed in parallel for each DC output.

I-TS-3870 Single – Standard System

Optional if I-TS can’t be placed directly next to DUT.

Changeover Test Cells / DUT

Testing one DUT and connecting the second one

I-TS-3870 Parallel – System

Communication via Parallel Interface

Enlargement of output current and power

Options

1. Adaptation to test application
   - Insulation monitoring device
   - Operating mode battery simulator
   - Operating mode battery simulator/tester switchable
   - Output contactor with increased performance
   - Current range switching 100% and 10%
   - Protective diode for sink mode
   - Parallel control device
   - PDSB (cabinet for additional options)
   - Discharge Unit
   - PDU (cabinet for DUT connection)
   - Capacity box

2. Adaptation to customer specification
   - Adaptation safe shutdown time
   - Intermediate discharge DC-link
   - Emergency stop at door
   - Door contact/door interlock
   - Special door lock
   - Special input voltage
   - Adaptation to USA/CAN market
   - Cabinet lamp/cabinet heating
   - Single-wire marking
   - Cabinet type Rittal - VX
   - Base frame control cabinet
   - Cabinet on wheels
   - Special paint

3. Interfaces
   - Remote contacts
   - SCPI/EtherCAT/PROFIBUS/PROFINET
   - Analogue
   - High speed analogue I+
   - Remote control

4. Protection class control cabinet
   - IP21/IP22/IP23/IP53
   - Increase protection class from below
   - Increase Protection class at open door
   - Fire protection

5. Cables and wires
   - Halogen free cables
   - Control cable/Sense cable/Power cable

6. Software
   - Test Software LION-TRACE BASIC
   - Interface MATLAB-SIMULINK
   - Interface LABVIEW

Exemplary Applications

I-TS-3870 Single – Standard System

- PDSB
- PDU
- Testobject (DUT)

I-TS-3870 Parallel – System

- PDSB
- PDU
- Testobject (DUT)

3) A discharge unit always assumes a PDSB. From a rectifier output > 250 kV, two DCUs are installed in parallel for each DC output.
Innovation and quality from Germany and Austria

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