

# adaptronic Prüftechnik GmbH

Off-the-shelf and customized wiring test systems

**Competence in Testing.**

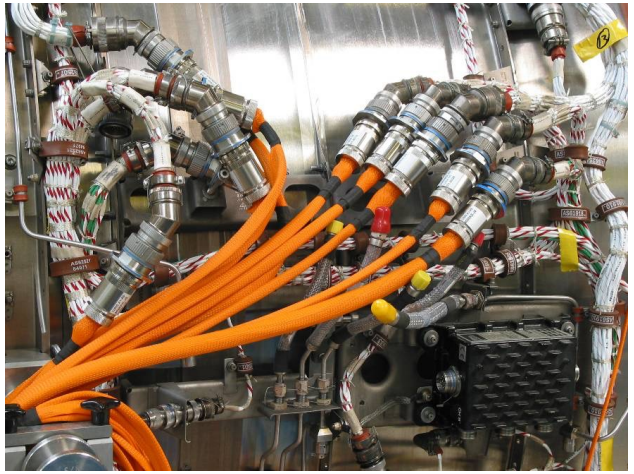
# adaptronic Prüftechnik GmbH

Competence in Testing

In addition to the standard test systems in the voltage variants low voltage 1 - 40 V, medium voltage 40 - 250 V and high voltage 250 - 6000 VDC / 5000 VAC, adaptronic also offers application specific products and applications.

**Our customer base:**

- Aerospace
- Railway
- Defence technology
- Automotive
- Telecommunication
- Medical equipment
- Automation



Every application range has its own logic and calls for more specific background knowledge.
Skills, knowledge and the creativity for the extra sensible aerospace sector is guaranteed continuously and driven ahead with a dedicated competence team.

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Competence in Testing

**adaptronic will support from the first idea till the end of product lifetime**

- Concept Studies
- Feasability Studies
- Preparing of specifications
- Project based product development
- Inhouse harness testing (contract testing)
- Engineering / Project Management
- Production / Manufacturing
- Preparation of test programs
- Commissioning
- Technical Support
- Calibrations
- Local Support
- Training
- Spare Parts
- Recycling



**Testing Task**

- Continuity test
- 4-wire measurement (Kelvin mode)
- Test of passive components (Resistors, Diods, LEDs, e.g.)
- Short circuit test
- HV insulation test
  - wire against wire
  - group against group
- Dielectric strength test
- Capacitance test
- Functional test (stimulating) of electromechanical components (Relays, Shunts)
- Inductance test
- Test of communication cable
- Test of optical attenuation

# Application fields in

# AERO

# market

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### Harness in Workshop

- 100% High voltage Test
- Continuity Test
- Short Circuit Test



### Harness inside the aircraft-section

- High voltage Test
- Continuity Test
- Component Test




### Complete wiring in the Aircraft

- Partial High voltage Test
- Partial Continuity Test
- Partial Short Circuit Test
- Partial Component Test



### Maintenance Testing

- High voltage Test
- Continuity Test
- Short Circuit Test
- Functional Test
- Component Test



### adaptronic follows the cable

adaptronic testers have the capability to fulfill all test tasks, starting from the cable workshop till the final assembly test of a complete aircraft, till the maintenance of engines.

First testing task is the pure harness itself.
This is normally handled in the responsible cable harness workshop which produces the harness.

The cable harness will be mounted in the partial aircraft body, wings, engines, etc.
During and after finishing this assembly the test must make sure, that no cable is damaged and all connections are in proper wiring.

After the final assembly of all aircraft sections, the complete wiring has to be tested again. This is to make sure, that there is no damage happen during assembly and all connections, which are wired during that task are correct wired.

Frequently maintenance task of an airplane requires also testing of the cabling, especially the internal wiring of the engines. adaptronic offers customized testing systems for this topic.

# Distributed Test System

# NT 800

- **Hardware Overview**
- **Measurement Specifications**
- **Application Examples**
- **Options**

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Central Processing Unit




Measurement Generators



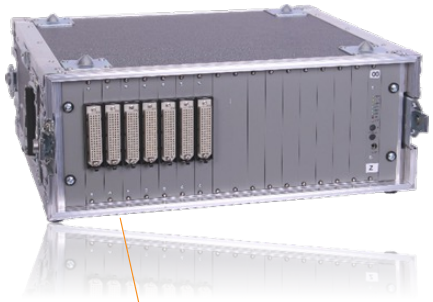


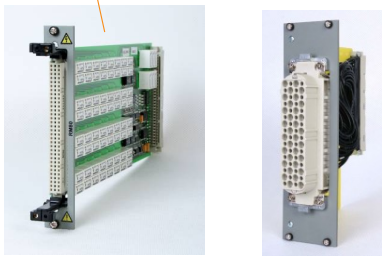


BUS Interface



Test Point Unit





Test Point Cards + Interfaces

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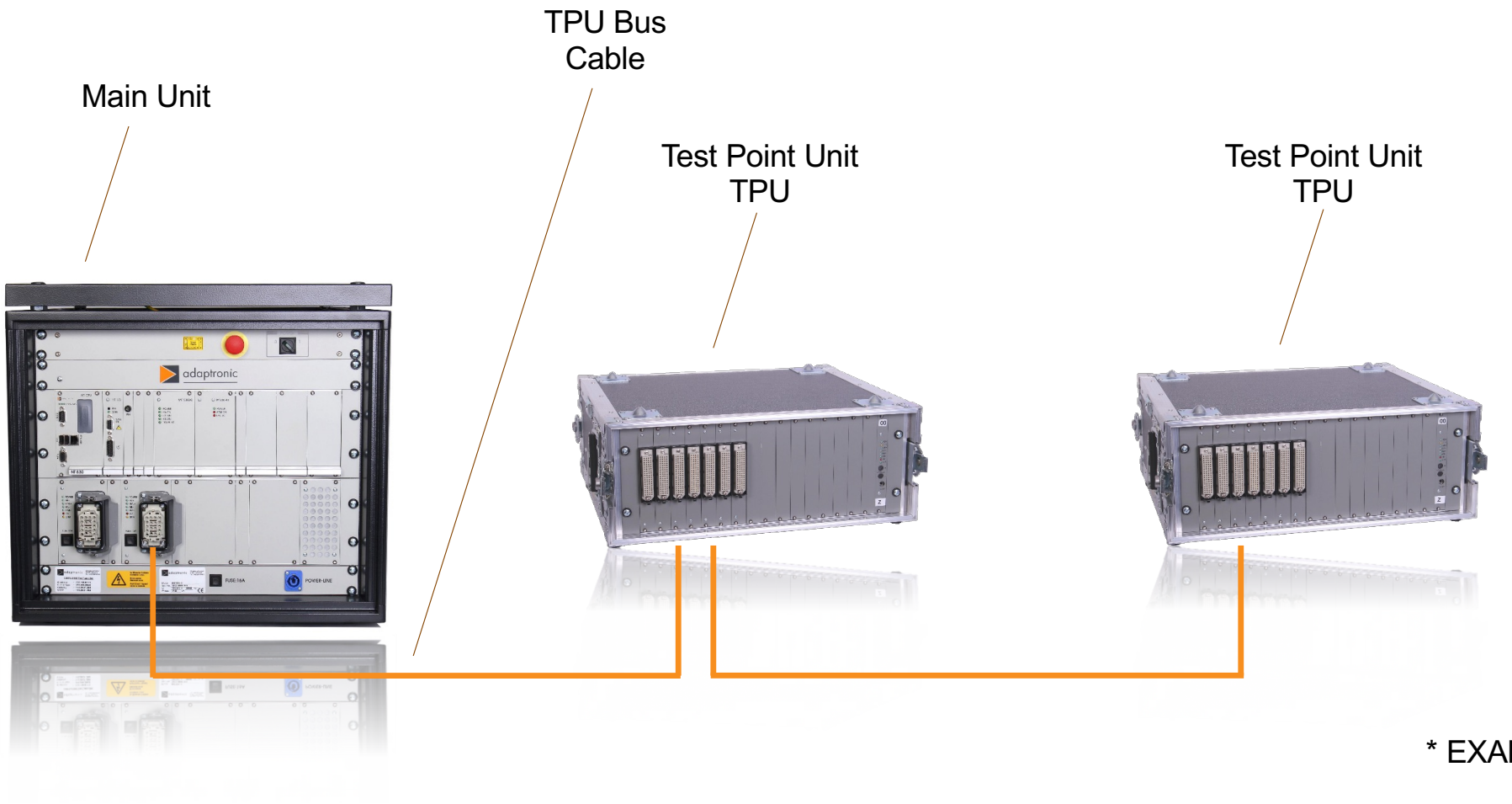


* EXAMPLE

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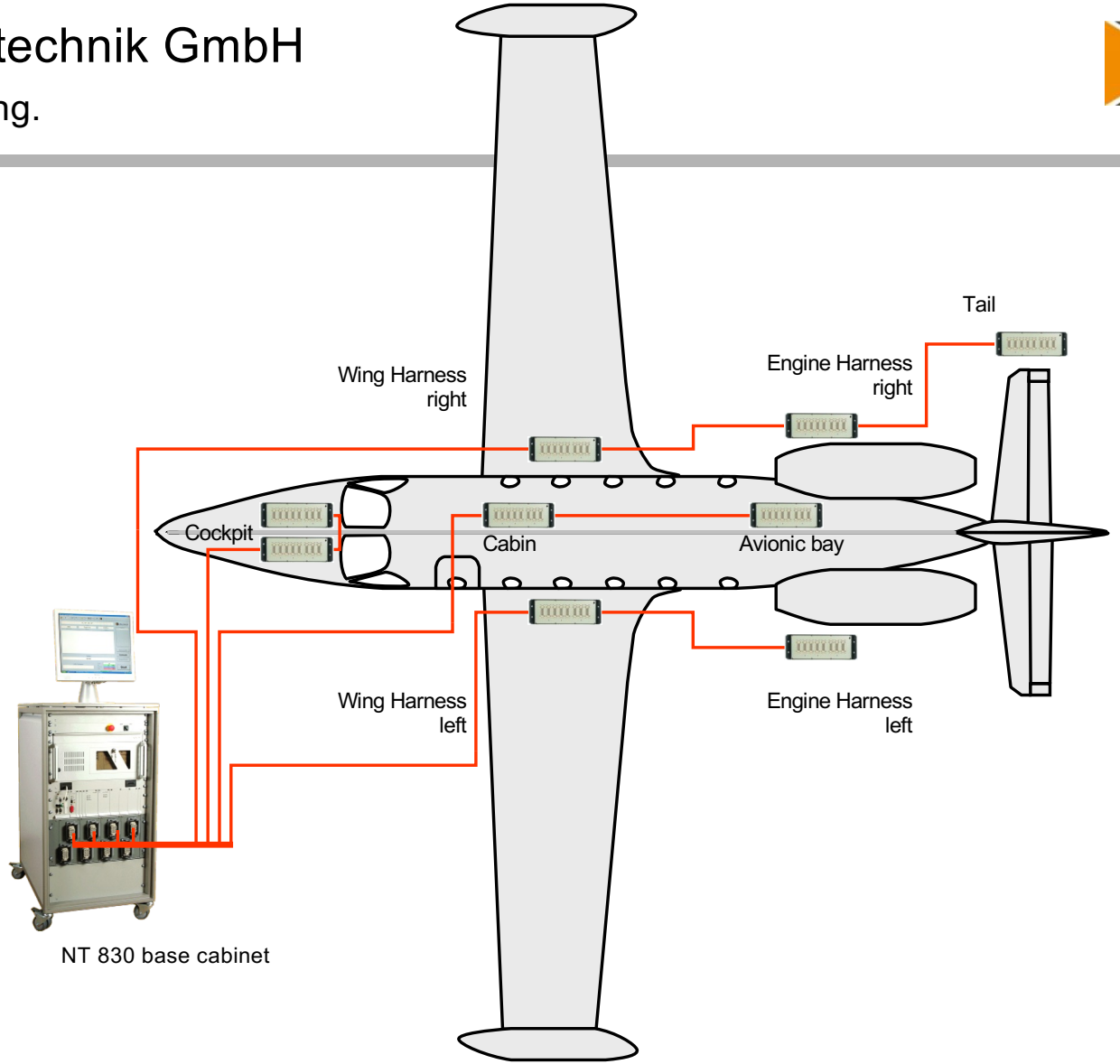
## System Overview



## Measurement specifications

| | NT 800-1 | NT 800-2 |
|---|---|---|
| **Max. test voltage DC** | 1500 VDC | 6000 VDC |
| **Max. test current DC** | 2000 mA | 2000 mA |
| **Max. test voltage AC** | 1060 VAC | 5000 VAC |
| **Max. test current AC** | 6 mA | 30 mA |
| **Max. number of test points** | 131.072 | 131.072 |

# Test Point Interface

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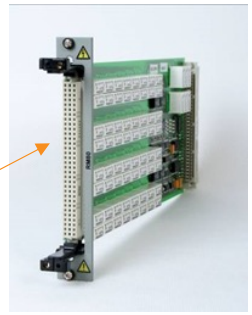
The test point interfaces can be freely and modular selected, based on the needs of the customer or existing equipment at side.

Test Point interface (TPI)

Test Point Card





Adapter Cable

adaptronic offers a huge number of variants of existing TPI cards or can design customer based test point cards



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# Intelligent Adapter Cables

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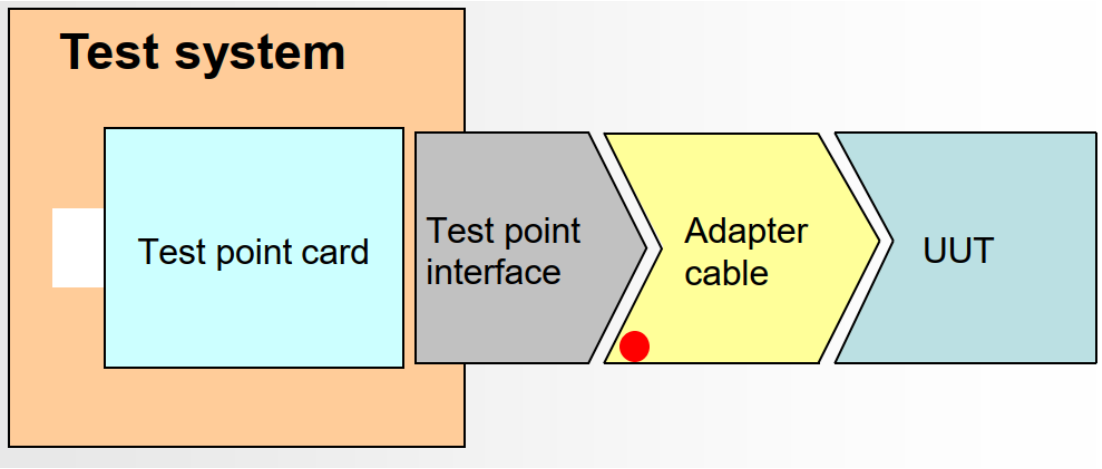
Intelligent adapter cables contain a data memory in each connector of each adapter.

The data memory occupies the last two pins in the test system connector of the adapter cable.

The operator can connect each adapter cable to any of the connectors of the test system.
The tester recognizes the adapter cable and automatically re-configure the test program according the actual connections.



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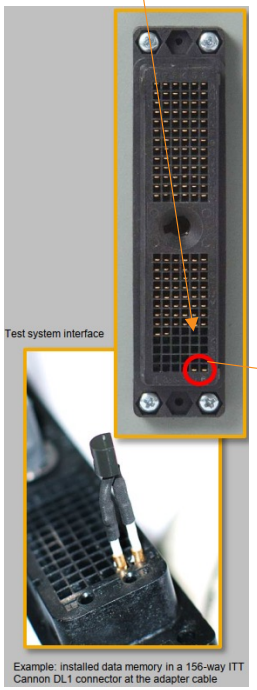
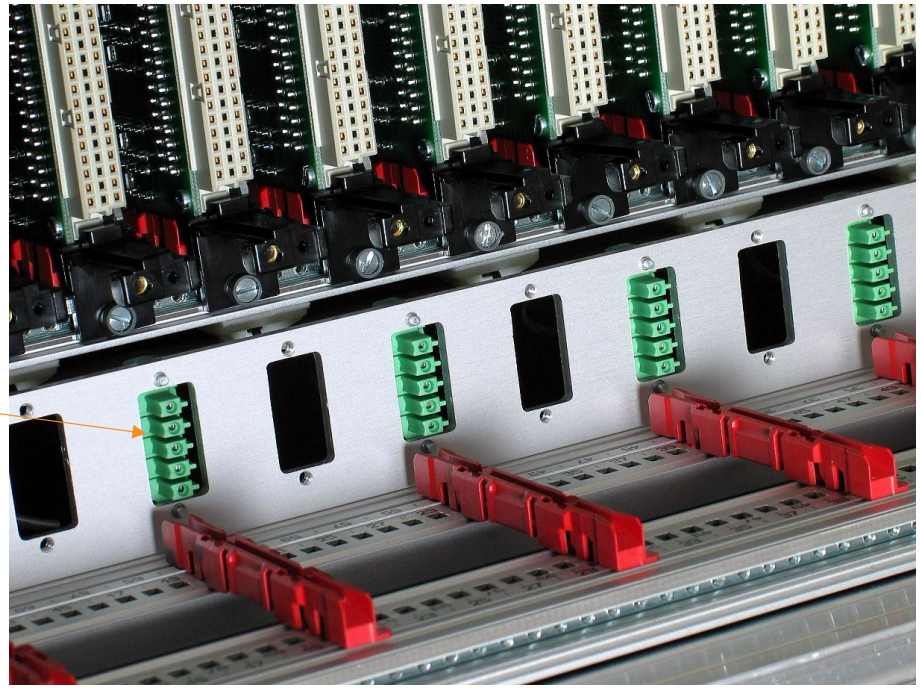
## Competence in Testing




IAC Module inside adapter cable

Interface (read / write) inside the tester / test point units



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# Application Examples

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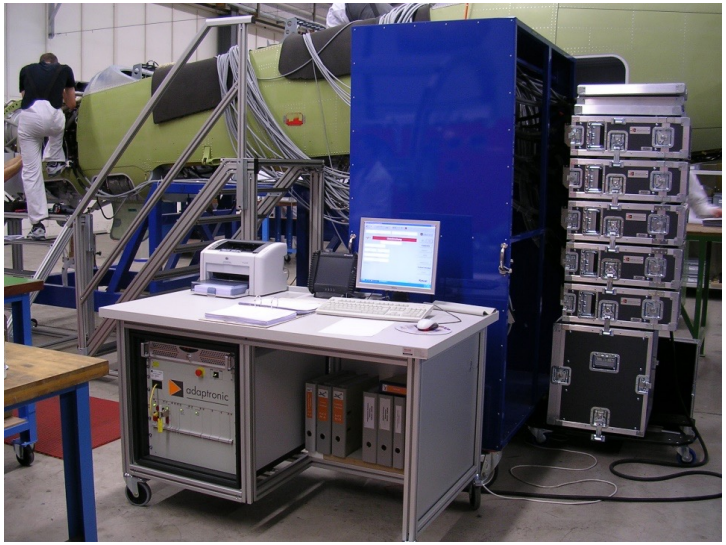
## Competence in Testing







## NT 800 equipped with:

- Distributed test system
- Additional tablet-PC with WLAN connection to the NT Control host.
- 5 intelligent Test Point Units (TPUs)
- Test point interface (TPI) ITT Canon DL1, 128 test points each
- 8192 high voltage test points
- Insulation test max. 1500 VDC
- Continuity test up to 2 A
- Component test (relays, switches…)
- Intelligent adapter cables (IAC)
- Remote maintenance of the test system

**Application:**

Final elect. test of small airplanes

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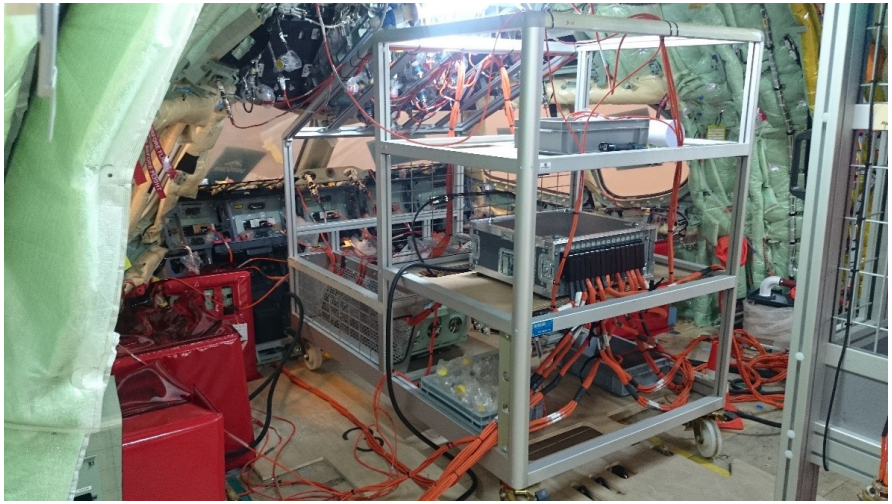
## Competence in Testing







## NT 800 equipped with:

- > 5000 test points
- LV + MV measurement generators
- Integration in LRU housings

**Application:**

Testing of nose section (A350)

**Year:** 2015

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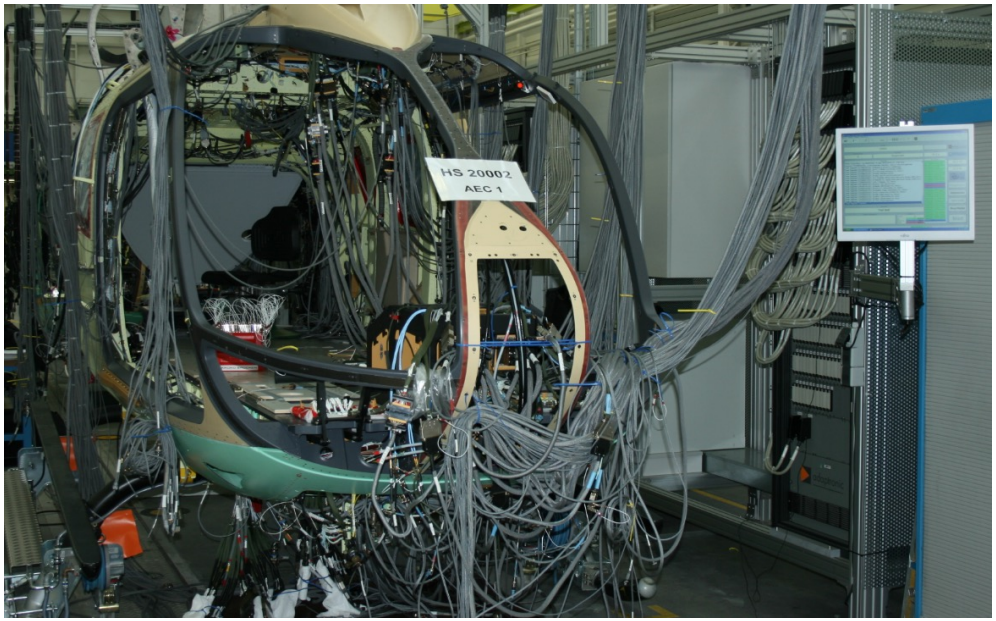
## Competence in Testing




## NT 800 equipped with:

- > 20000 test points
- MV + LV measurement generators

**Application:**

Test of the internal cable harnesses of helicopters

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## Competence in Testing





HAL Tejas Mk2

## NT 800 equipped with:

- > 20000 test points
- LV measurement generators
- MV measurement generators (1.500 Volt)
- Preparation of test programs
- Intelligent adapter cable

**Application:**

Final electrical test of fighting jet

**Year:** 2018

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# Software

NT Control

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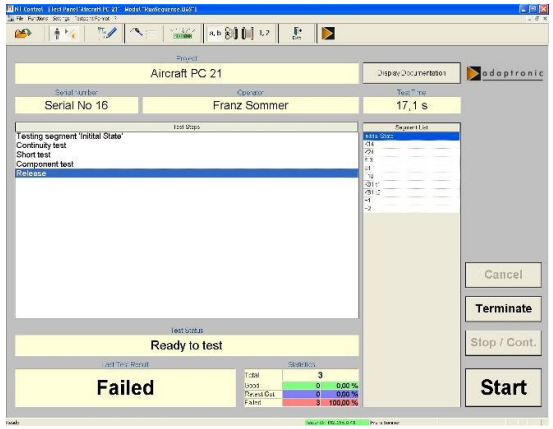
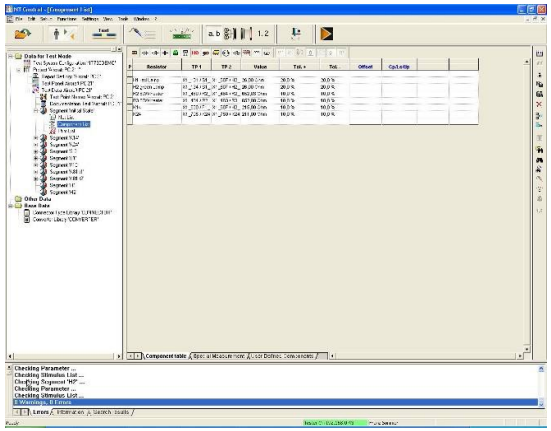
**Significant simplification of the test procedure, reduced programming and debugging time**

- Graphical user interface
- Easy and time-saving generation of test programs
- Reliable visualized user
- Unique support of detailed error localization

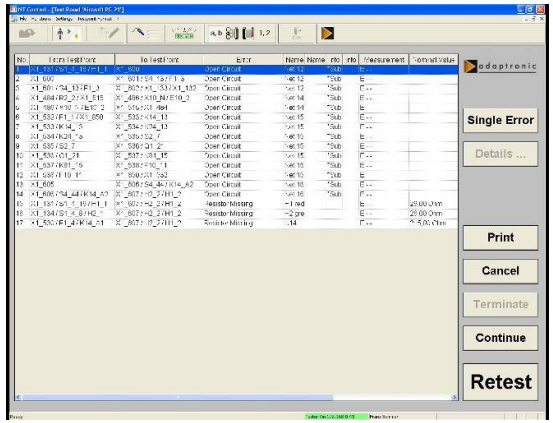
Test mode:
Example of a test panel




Programming mode:
Component list



Error list



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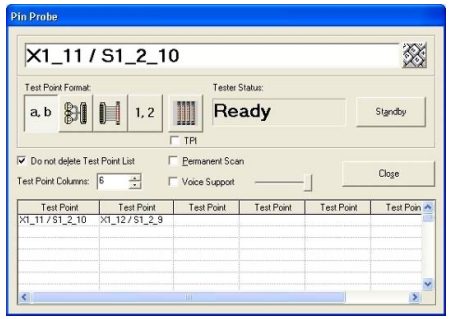
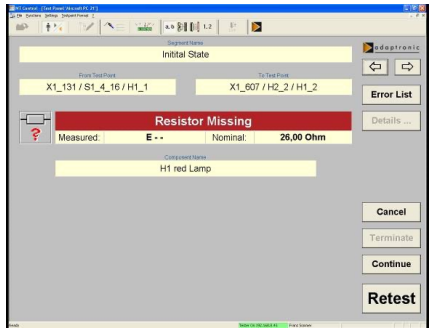
**Smart solutions, e.g.:**

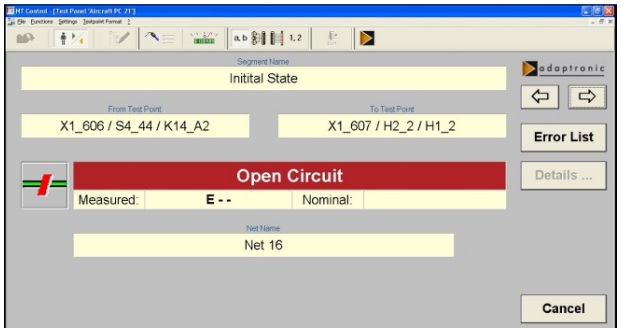
- Customer specific adapter test point interfaces
- Intelligent adapter cables (IAC) for the random assignment of adapter cables
- Import / interpreter solutions for existing files in other standard
- UNICAD-Importer: automated  test data import from CAD-data or Excel
- Integrated multimeter

Pin probe

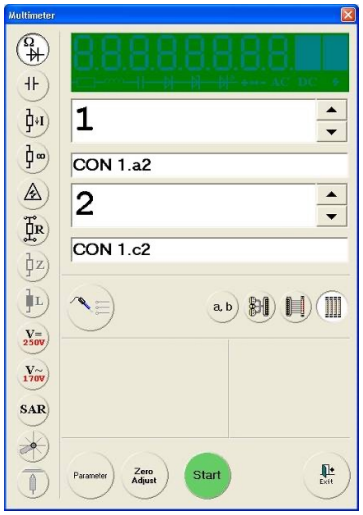



Single error display




Multimeter function



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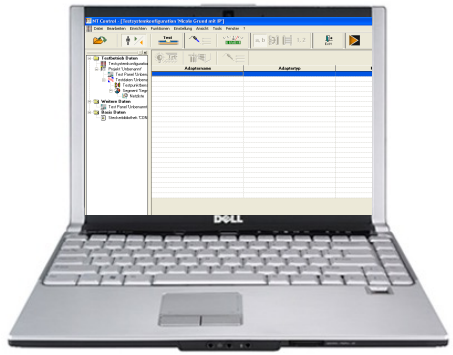
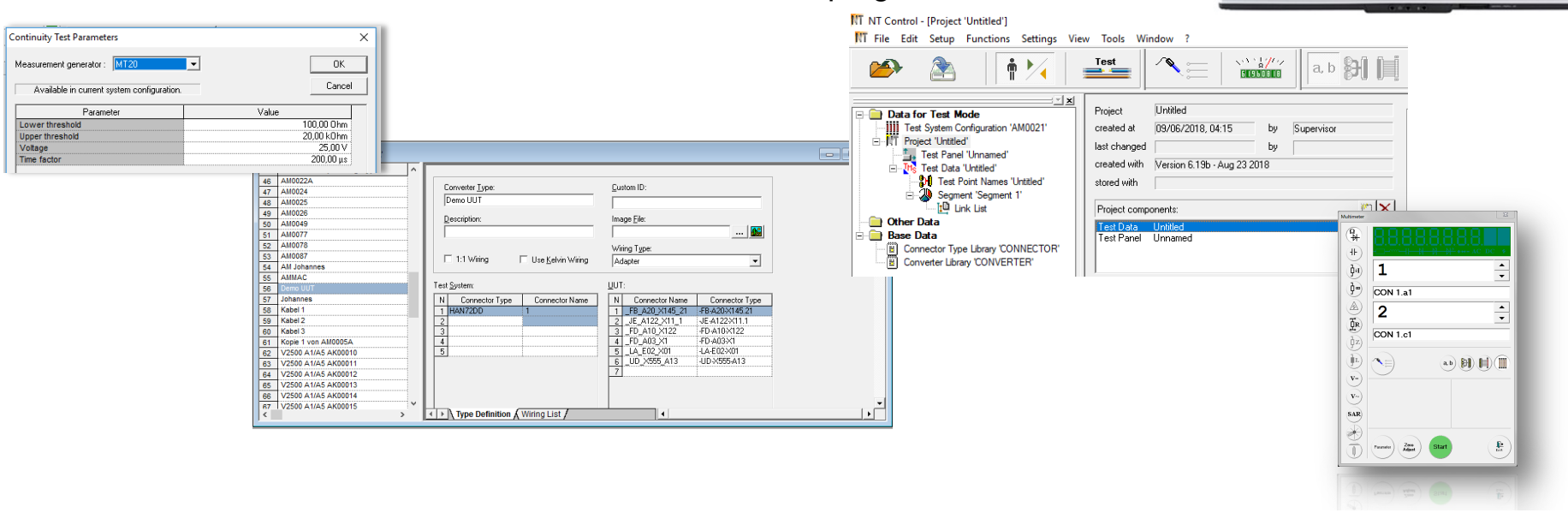
- NT Control has to be installed on an external computer
- NT Control is an application running under Windows® and represents the interface between the operator and the hardware of the test system
- NT Control is a graphic display, which allows easily to create test data. It can be switched between program and test mode
- NT Control can also be used as an offline editor for test programs





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# Software

UNICAD

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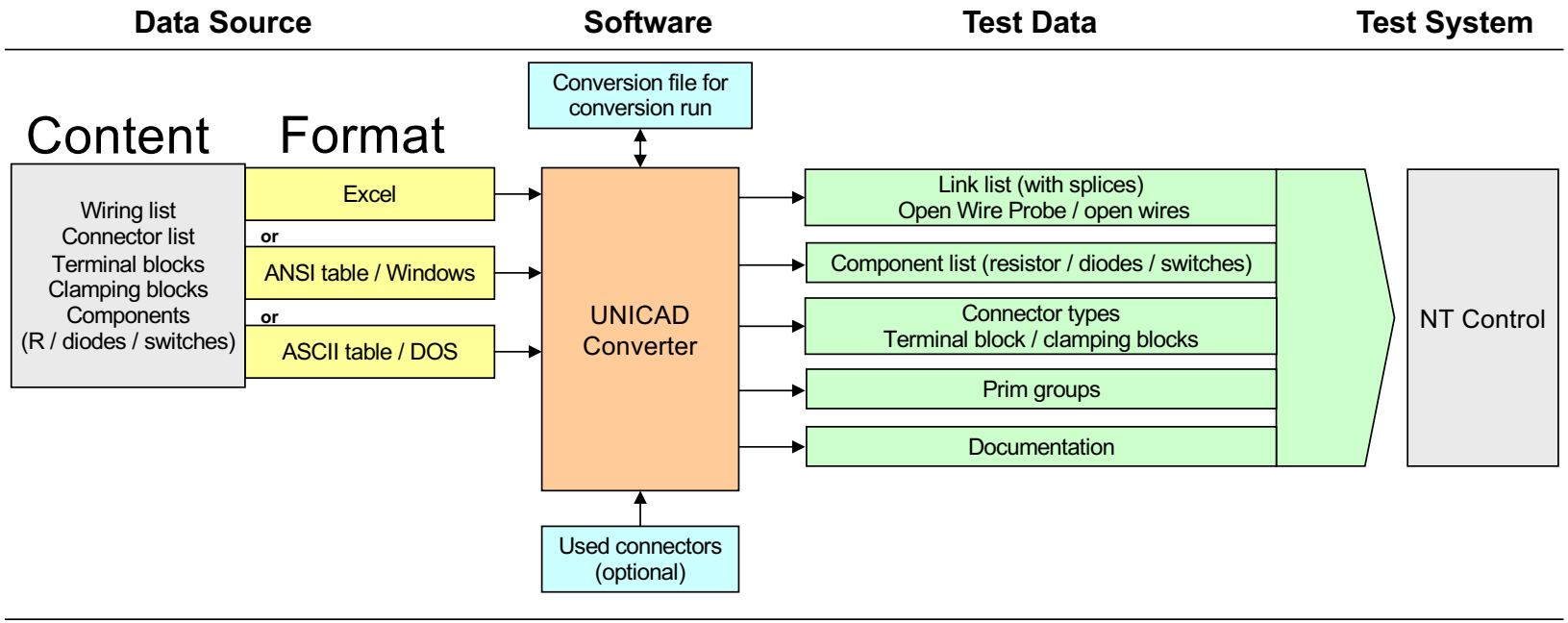
- UNICAD is to be used for the conversion of customer specific wiring lists.
- UNICAD is a stand-alone software
- Data can automatically converted into test data for test programs



# Options

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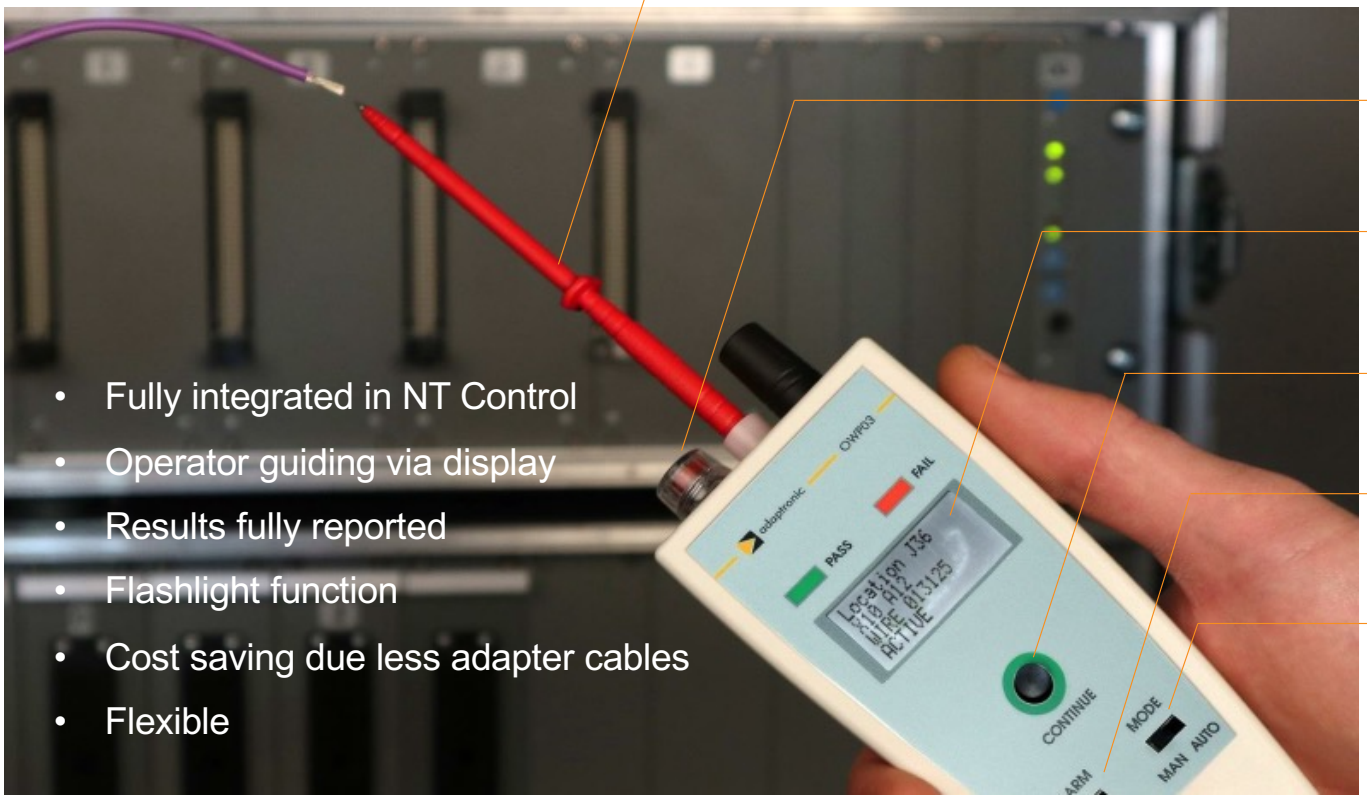
## Open Wire Probe




- Fully integrated in NT Control
- Operator guiding via display
- Results fully reported
- Flashlight function
- Cost saving due less adapter cables
- Flexible

Exchangeable test tip

Fuse

LCD color display

Continue push button

Acoustical mode

Mode switch (manual / auto)

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Get the solution – contact us!

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