Bonding And Loop Resistance Tester

>BLRT3<

The equipment is developed as multifunctional bonding tester. It is especially used in aircraft manufacturing. It can be used on all aircraft types.
It is capable of performing various tests depending on used accessories.

The test capability ranges from manual 4-wire-bonding tests and loop resistance tests with current clamps up to the possibility to carry out these tests automatically and to store the measuring values directly in the database.

- All measuring functions can be selected and combined independently and can also be retrofitted at a later stage
- The <BLRT3> is housed in a light and practical case ensuring easy transport for the user
- Long testing period by hot-swap capable Li-Ion batteries
- A wide range of accessories is available for this tester

GENERAL INFORMATION

- Large touch display for good readability and integrated Windows PC
- Software enables simple and intuitive operation
- Multi-function tester with selectable standard and special functions
- Coded pincers and test cables can be replaced independently from the device
- USB, LAN and optional WLAN interface
- Automatic test procedures with adaptable interface (e.g.: Excel)
- App available for BLRT3 remote control
- Including self test unit for function control of the test equipment and the measuring clamps
- A customer specific automatic test enables an easy implementation of existing processes

TECHNICAL DATA - TEST EQUIPMENT

Electrical supply (requirements):

Mains charger adapter:	1/N/PE AC 50/60Hz
Accumulator:	2x Li-Ion 14.4V 72Wh

Functions:

Measuring functions:	see “FUNCTIONS“
Ranges:	see “OPTIONS“
Accuracy:	see “OPTIONS“

Output values:

Output voltage DC:	max. 24VDC
Output current DC:	max. 10ADC
Output voltage AC:	max. 55VAC
Output power AC:	max. 45W

Measurement range:

Functions:	Measurement ranges and tolerances are listed in the item “OPTIONS“	
Battery voltage:	Range:	0 to 28V
	Tolerance:	0.5% of reading

Interface:

Interface:	1x LAN (RJ45) 2x USB2.0 (USB-A) WLAN
Memory capacity:	> 1000 measuring values

Operating conditions (operation):

Temperature:	10°C to 40°C (50°F to +104°F)
Rel. humidity:	max. 95% relative humidity (non-condensing)

Operating conditions (storage):

Temperature:	-20°C to +70°C (-4°F to 158°F)
Air humidity:	max. 95% relative humidity (non-condensing)

Dimensions and weight:

Width:	320mm (12.6in)
Depth:	100mm (4.3in)
Height:	220mm (9.1in)
Weight:	approx. 4 kg (8.8lb)

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MEASURING FUNCTIONS

BONDING TESTER (OPTION A)

(TEST-FUCHS part no. 159060107)

> Technical description

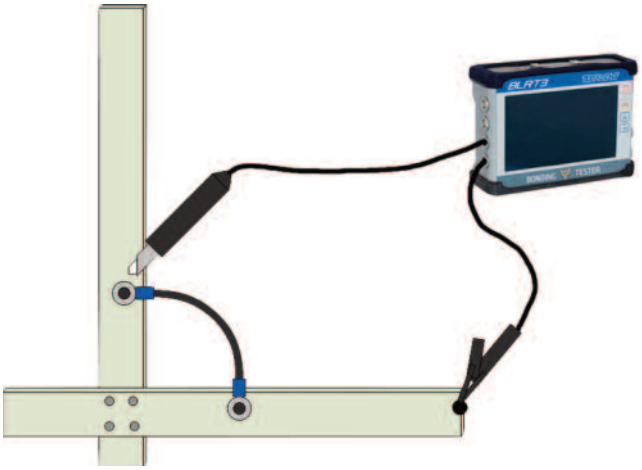
Bonding Tester with 10A, 1A and 0.1A test current. It works as a Kelvin Resistance Meter.

The bonding tester measures the resistive connection between two measuring points.

During the bonding test an increased test current is injected in the unit under test by means of test probes or terminals. The voltage drop is recorded on two test points. The contact resistance between voltage test points is calculated by means of current and voltage values.

This measuring method only works when the total measurement current flows through the unit under test.

Schematic diagram of the test set-up



LOOP RESISTANCE TESTER (OPTION B)

(TEST-FUCHS part no. 159060108 for option B - 1.000Hz)

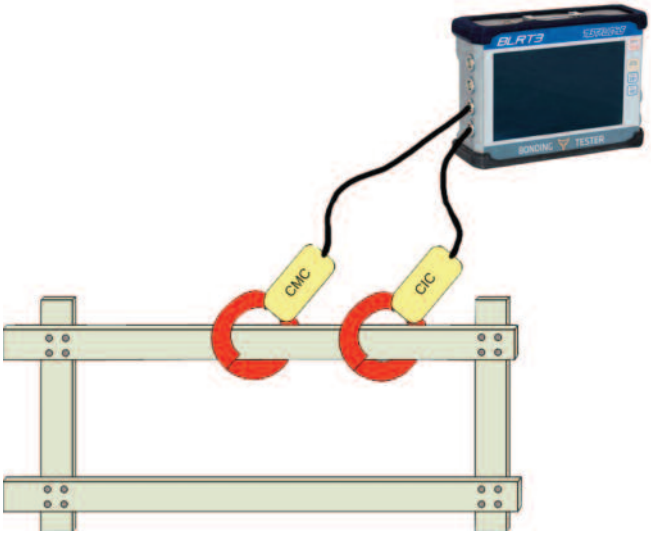
> Technical description

The “Loop Resistance Test“ measures the overall resistance of a bonding loop. It is used for example when a metal tube has multiple connections to structure.

A “Smart Current Injection Clamp“ (SCIC) injects alternating current into the current loop. The voltage required therefore is measured. A “Smart Current Measurement Clamp“ (SCMC) measures the injected current. Alternativetely, a combined "Smart Current Injection and Measurement Clamp" (SCIMC) can be used. The overall resistance of the current loop is calculated by means of voltage and current value.

For this method it is essential that there is only one current loop.

Schematic diagram of the test set-up



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TECHNICAL DATA - MEASURING FUNCTIONS

Measuring function	Option	TEST-FUCHS part no.	Measuring range (mOhm)	Reso-lution (µOhm)	Adjust current (A)	Fre-quency (Hz)	Standard accuracy (% o.m.v.)	Required accessories	Remarks
Bonding Tester	**A**	159060107	2 to 1000 at 0.1A	1	0,1 1 10	DC	0.2% m.v. +0.2% f.s.	2 x Kelvin Probe	Standard Bonding Test
Loop Resistance Tester 1000Hz	**B**	159060108	1 to 400	10	1	1000	5% m.v. or 2mOhm	1 x Current Injection Clamp 1 x Current Measurement Clamp or 1 x Combined Injection Measurement Clamp	Standard Loop Resistance Test

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Standard Accessories For Bonding And Loop Resistance Tester >BLRT3<

Battery
(2 batteries PH3054HD)
(TEST-FUCHS part no. 106220238)

Manufacturer:	INSPIRED ENERGY
Type:	PH3054HD
Output voltage:	14,4V
Power:	72Wh
Current output:	20A
Intermediate charging is possible (no memory effect)	

Desktop Charger
(TEST-FUCHS part no. 106220260)

Manufacturer:	INSPIRED ENERGY
Model:	PH1000
Input:	AC 100 to 240V; 50 / 60Hz
Output:	DC 10 to 17V; 1.8A
Loading time:	approx. 3h

Shoulder Strap
Type “1472“
(TEST-FUCHS part no. 106330923)

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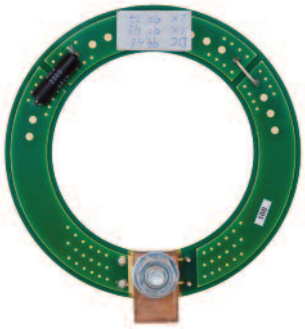
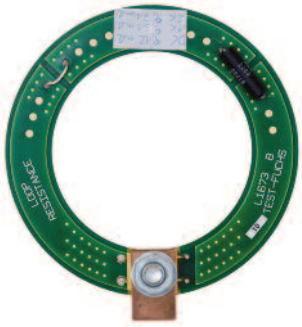
Self Test Unit Loop Resistance
(TEST-FUCHS part no. 106375848)

- L1673-16/000/000 100mOhm
- not calibrated



Self Test Unit Loop Resistance
(TEST-FUCHS part no. 106375838)

- L1673-6/000/000 10mOhm
- not calibrated



Self Test Unit Bonding
(TEST-FUCHS part no. 106172198)

- BURSTER 10mOhm
- not calibrated

Skross Travel Adapter
(TEST-FUCHS part no. 103206789)

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Optional Accessories For Bonding And Loop Resistance Tester >BLRT3<

Storage Case “EXPLORER 8.850-W“

(TEST-FUCHS part no. 107102170)

With wheels and extendable handle
Very solid and stackable
Coated inside with foam

Compartments for:	- BONDING AND LOOP RESISTANCE TESTER <BLRT3> - Various accessories - Technical documentation
Dimensions:	670 x 510 x 372mm (26.0 x 20.1 x 14.6in)
Weight (empty):	12kg (26.5lb)

Symbolic figure

Desktop Charger

(TEST-FUCHS part no. 106220239)

Manufacturer:	Inspired Energy
Type:	PH5000
Input:	AC 100 to 240V; 50 / 60Hz
Output:	DC 10 to 17V; 1.8A
Loading time:	approx. 3h

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Small Smart Current Injection Clamp <SCIC1>

(TEST-FUCHS part no. 150021371)

Manufacturer:	Fluke modified by TEST-FUCHS
Inner diameter:	21mm (0.8in)
Length:	135mm (5.3in)
Width of the clamp:	18mm (0.7in)
Width of the clamp housing:	28mm (1.1in)
Height:	48mm (1.9in)
Weight:	494g (1.1lb)
Cable length:	4m (157.5in)
Windings, primary:	1000
Windings, measurement:	10
Supply max. 1000Hz:	55V
Uloop max. 1kHz:	55mV

Small Current Measurement Clamp <SCMC1>

(TEST-FUCHS part no. 150021373)

Manufacturer:	Fluke modified by TEST-FUCHS
Inner diameter:	21mm (0.8in)
Length:	135mm (5.3in)
Width of the clamp:	18mm (0.7in)
Width of the clamp housing:	28mm (1.1in)
Height:	48mm (1.9in)
Weight:	494g (1.1lb)
Cable length:	4m (157.5in)
Windings, primary:	1,000
Max. current measurement:	10A

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Small Smart Current Injection and Measurement Clamp <SCIMC1>

(TEST-FUCHS part no. 150021375)

Manufacturer:	TEST-FUCHS
Inner diameter:	26mm (1.0in)
Length:	175mm (6.9in)
Width of the clamp:	31mm (1.2in)
Width of the clamp housing:	31mm (1.2in)
Height:	62mm (2.4in)
Height of the clamp arm:	16mm (0.6in)
Cable length:	3m (118.1in)
Windings, primary:	600
Winding, secondary	
- Voltage measurement:	60
- Current measurement:	600
Maximal supply 1 kHz:	30V
Maximal Uloop 1 kHz:	50mV

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Big Smart Current Injection Clamp <SCIC2>
(TEST-FUCHS part no. 150021372)

Manufacturer:	Fluke modified by TEST-FUCHS
Inner diameter:	55mm (2.2in)
Length:	230mm (9.1in)
Width of the clamp housing:	40mm (1.6in)
Height:	106mm (4.2in)
Weight:	1.6kg (3.5lb)
Cable length:	4m (157.5in)
Windings, primary:	95
Windings, measurement:	10
Supply max. 1000Hz:	8V
Uloop max. 1kHz:	80mV

Big Current Measurement Clamp <SCMC2>
(TEST-FUCHS part no. 150021374)

Manufacturer:	Fluke modified by TEST-FUCHS
Inner diameter:	55mm (2.2in)
Length:	230mm (9.1in)
Width of the clamp housing:	40mm (1.6in)
Height:	106mm (4.2in)
Weight:	1.6kg (3.5lb)
Cable length:	4m (157.5in)
Windings, primary:	1,000
Max. current measurement:	10A

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Big Smart Current Injection and Measurement Clamp <SCIMC2>

(TEST-FUCHS part no. 150021376)

Manufacturer:	TEST-FUCHS
Inner diameter:	66mm (2.6in)
Length:	190mm (7.5in)
Width of the clamp housing:	40mm (1.6in)
Height:	190mm (7.5in)
Cable length:	3m (118.1in)
Windings, primary:	600
Winding, secondary	
- Voltage measurement:	60
- Current measurement:	600
Maximal supply 1 kHz:	40V
Maximal Uloop 1 kHz:	65mV

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Measuring line A
<PKL574-1>
(TEST-FUCHS part no. 103241977)

Figure of a similar measuring line

The measuring line is provided for the earth connection to the UUT. Respectively one current and one voltage pin is fixed to the structure.

This measuring line consists of a plug with bayonet coupling and a 5m (196.8in) long cable.

The 2 safety banana connectors form the ending.

All standard-pressure peaks with 4mm (0.2in) connection and an admissible current rating of 10A can be used.

> Conducting lines:	1 (A)
> Measuring lines:	1 (A_{sense})
> Complete 4-conductors-measurement possible:	Yes with measuring line B
> Complete 2-conductors-measurement possible:	No
> Current rating:	max. 10A
> Connecting cable:	5,000mm (196.8in)
> Accessories:	Cable bag >KABTA2<

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Measuring line B
<PKL574-2>
(TEST-FUCHS part no. 103241978)

Figure of a similar measuring line

The measuring line is provided for the earth connection test (measuring line B) in combination with measuring line A.

This measuring line consists of a live line (B) and a measuring line (B_{sense}).

This measuring line consists of a plug with bayonet coupling and a 5m (196.8in) long cable.

The 2 safety banana connectors form the ending.

All standard-pressure peaks with 4mm (0.2in) connection and an admissible current rating of 10A can be used.

> Conducting lines:	1 (B)
> Measuring lines:	1 (B_{sense})
> Complete 4-conductors-measurement possible:	Yes with measuring line A
> Complete 2-conductors-measurement possible:	No
> Current rating:	max. 10A
> Connecting cable:	5,000mm (196.8in)
> Accessories:	Cable bag >KABTA2<

FURTHER VERSIONS, OPTIONAL VERSIONS OR OTHER CABLE LENGTHS ARE AVAILABLE ON REQUEST.

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