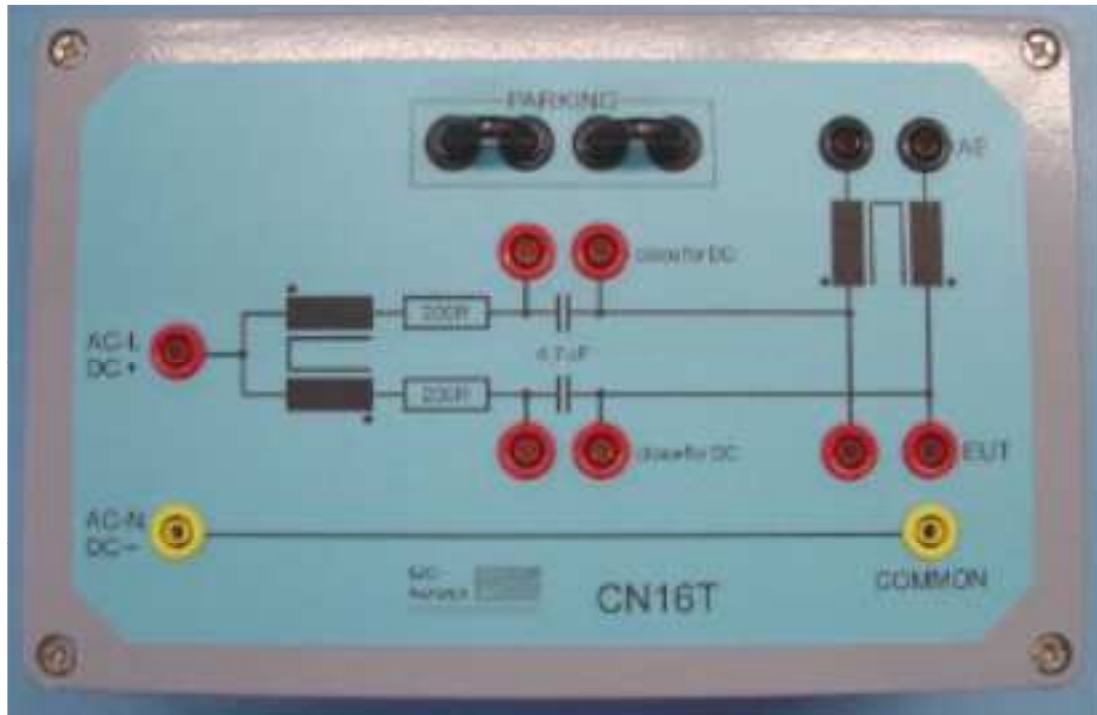


User Manual CN16T

PN 103539

CN16T is an accessory to TRA3000 C and EXT-TRA3000 C SHORT



Title:
Date:
General Manager:
Quality Manager:
Revised:

Coupling Network CN16T 1
30.04.1999
M. Lutz
R. Henz
14. May 2014

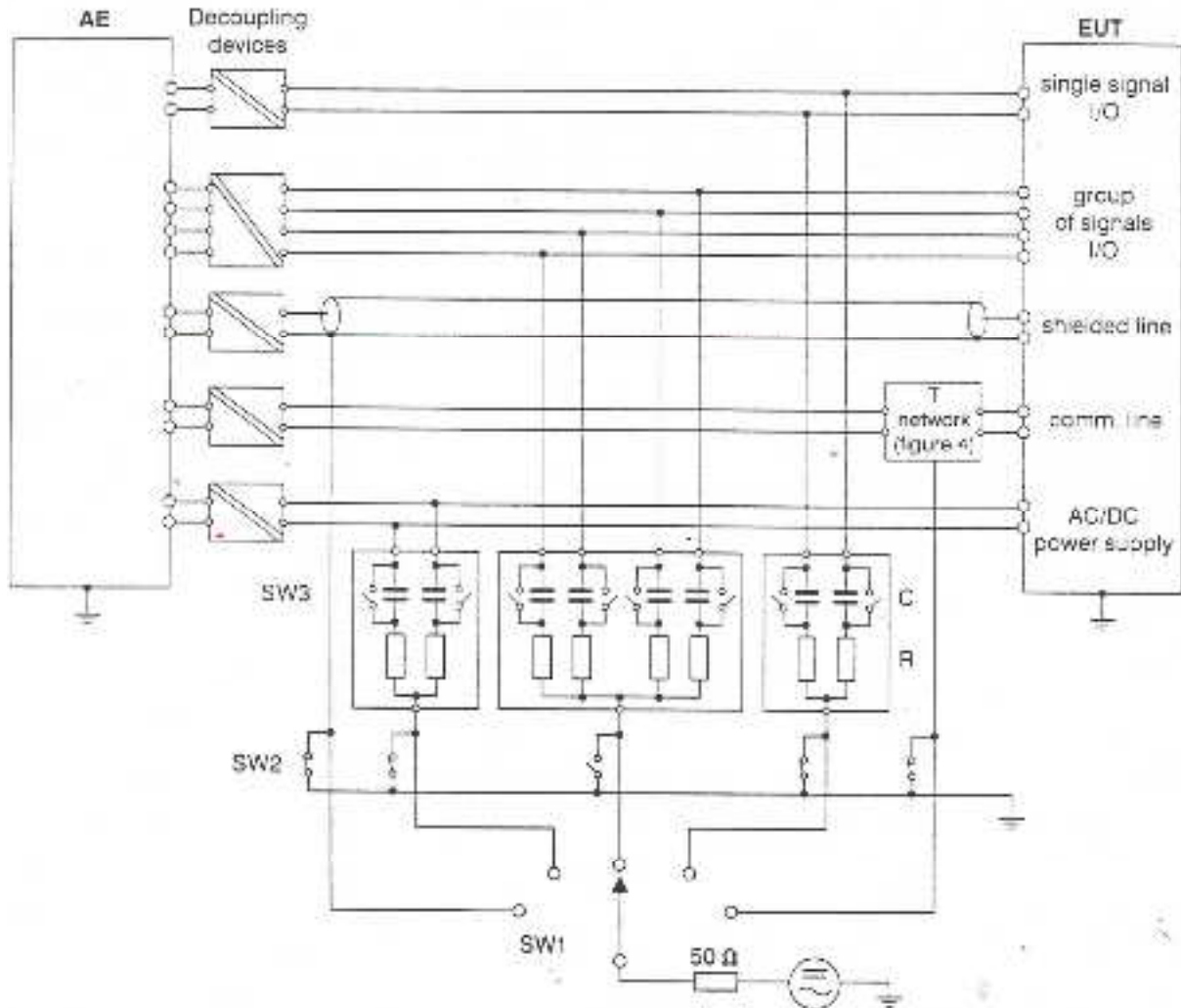
Common Mode - Coupling Network for Telecommunication
CN16T

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1 IEC 61000-4-16 Information

1.1 Schematic circuit for the type tests



1.2 Test levels

Table 1 - Levels for continuous disturbance

Level	Open circuit test voltage V (RMS)
1	1
2	3
3	10
4	30
x	Special

NOTE - "x" is an open level. This level can be given in the product committee's specification. For the duration of the test, see 8.2.

Table 2 - Levels for short duration disturbance

Level	Open circuit test voltage V (RMS)
1	10
2	30
3	100
4	300
x	Special

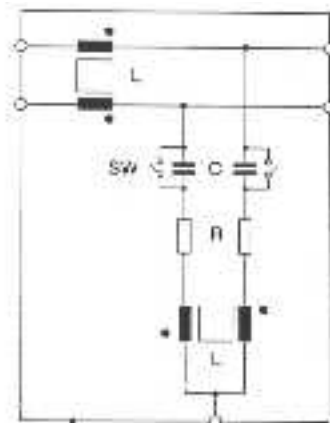
NOTE - "x" is an open level. This level can be given in the product specification. The duration of the test is 1 s; for particular applications, different duration can be given in the product committee's specification.

Table 3 - Test levels in the frequency range 15 Hz-150 kHz

Level	Profile of the test voltage (open circuit)			
	V (RMS)			
	15 Hz - 150 Hz	150 Hz - 1,5 kHz	1,5 kHz - 15 kHz	15 kHz - 150 kHz
1	1 - 0,1	0,1	0,1 - 1	1
2	3 - 0,3	0,3	0,3 - 3	3
3	10 - 1	1	1 - 10	10
4	30 - 3	3	3 - 30	30
x	x	x	x	x

NOTE - "x" is an open level. This level can be given in the product specification.

1.3 T-Network



1.4 Accessories,dimensions

1.4.1 Included articles, dimensions

CN16T (Article No. 103539)

Mechanical Dimensions

Unit Height:	B
Length:	28 cm
Width:	18 cm
Height:	11 cm
Net Weight:	3 kg

Included Articles

According to STL-Version 20, STL-Version 1:

Qty	P/N	Description
1	104801	Brochure TRANSIENT 3000
1	104802	Calibration certificate
1	103191	Standard accessories pack
1	103194	CD-UM-IN-ALL includes all User Manuals and Instruction sheets of all EMC PARTNER AG sales products.

1.4.2 Standard accessories

Accessories to CN16T (Article No. 103539)
According to OP-Variante 1, OP-Version 1

Qty	PN	Description	Weight (kg)	Length (cm)	Width (cm)	Height (cm)
1	100280	MC protected banana plug, yellow	0	0	0	0
2	100281	MC protected banana plug, black	0	0	0	0
2	100283	MC protected banana plug, red	0	0	0	0
2	100284	Con. MC 4mm length 19mm	0	3.8	2.8	0.8
1	103084	MC safety cable with protected banana plug, yellow	0	25	0	0
1	103088	MC safety cable with protected banana plug, red	0	25	0	0
1	103089	MC safety cable with protected banana plug, yellow/green	0	50	0	0

Assembly instructions see last pages at the end of this manual

1.4.3 Additional available networks and accessories

PN	Type	Short description
104123	FXT-TRA3000 C-SHORT	Extends TRA3000 C with short test. FXT-TRA3000 C-SHORT Consists of one external trafo box. Requires 1x PS3 power supply, 1x RS/85-RS232 ADAPTER to control the PS3 from TRA3000. Minimum configuration TRA3000 C. IEC 61000-4-16
106900	CN16DC	Coupling network for common mode coupling dc up to 300V onto EUT power line voltage L to N/PE of 230V according to IEC 61000-4-16. The mains must be decoupled with a insulation transformer DN16-1P6 single phase 8A or DN16-1P6 single phase 16A
103538	CN16	Coupling network for common mode coupling dc, 50/60Hz and sinusoidal up to 150kHz according to IEC 61000-4-16.
106962	DN16-1P16	Mains decoupling transformer single phase 230V/16A 50/60Hz. For tests according to IEC 61000-4-16: DC, 50/60Hz and sinusoidal up to 150kHz. Housing 19" 4 UH For coupling select CN16, CN16T or CN16DC
106961	DN16-1P6	Mains decoupling transformer single phase 230V/6A 50/60Hz. For tests according to IEC 61000-4-16: DC, 50/60Hz and sinusoidal up to 150kHz. Housing 19" 4 UHdc. For coupling select CN16, CN16T or CN16DC
105840	CN16-22-7C	Coupling network for common mode coupling up to 300V 50/60Hz in accordance with IEC 60255-22-7, 2 ports: 2 x R 220 Ohm and 2 x C= 0.47µF

Common mode coupling network CN16T

105841	CN16-22-7D	Coupling network for differential mode coupling up to 250V 50/60Hz in accordance with IEC 60255-22-1. 2 ports: 2 x R 100 Ohm and 2 x C= 0.1µF
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2 Safety

The CN16T belongs to safety class 1

2.1 Safety standards

The CN16T fulfils the requirements of the safety standards IEC 61010 „Safety requirements for electrical equipment for measurement, control and laboratory use and the safety standard VDE 0101 (Safety circuits, warning lamps or connector for warning lamps). Based on EN 61010 (IEC 61010) the declaration of conformity to low voltage directive LVD 73/23/EEC (O.J. N° L77, 1973-03-26) is given.



This manual is a integral part of the CN16T network. The instructions contained in the manual regarding operation and the test set up are to be strictly observed.

2.2 Climatic conditions

The CN16T network contain high voltage circuits in integrated form. EMC PARTNER only guarantees a correct functioning of the CN16T network and the associated accessories, if the CN16T is operated in the climatic condition specified.

Temperature	15 °C to 35 °C	60 to 90°F
Relative humidity	45 % to 75 %	12.9 to 15.4 PSI
Atmospheric pressure	86 kPa to 106 kPa	(860 to 1060 mbar)
Not influenced by:	direct solar radiation, rain or condensate water, dust or larger electro magnetic fields as specified in the EMC compatibility chapter.	

The CN16T should be operated in a dry, clean room. If for any reason water condenses in the CN16T, then no CN16T operation should be started before the network is dry.

It is strictly forbidden to operate the CN16T network in rooms with of gas explosion risk. The high voltage of the CN16T can generate sparks, which can ignite the gas.



People with heart pacemakers should not be in the vicinity of the test set up during operation.

2.3 Precautionary measure during use

It is wise to observe the following rules:

- | |
|--|
| • Never touch the EUT when a test is in operation. |
| • Touch no connectors or connection cable when a EMC test is in operation. |
| • The high voltage of the CN16T network and the power on the EUT must be turned off before a manipulation on the EUT is carried out. |
| • For all services, e.g. check of the fuses, the power cord must first be unplugged. |

2.4 The manual is an integral part of the equipment. Refer to the manual.

This manual is an integral part of the CN16T network. The safety rules and precautions in the manual must be observed. EMC PARTNER and their representatives are not responsible for damage to persons and equipment by not observing the safety rules and precautions specified in this manual.

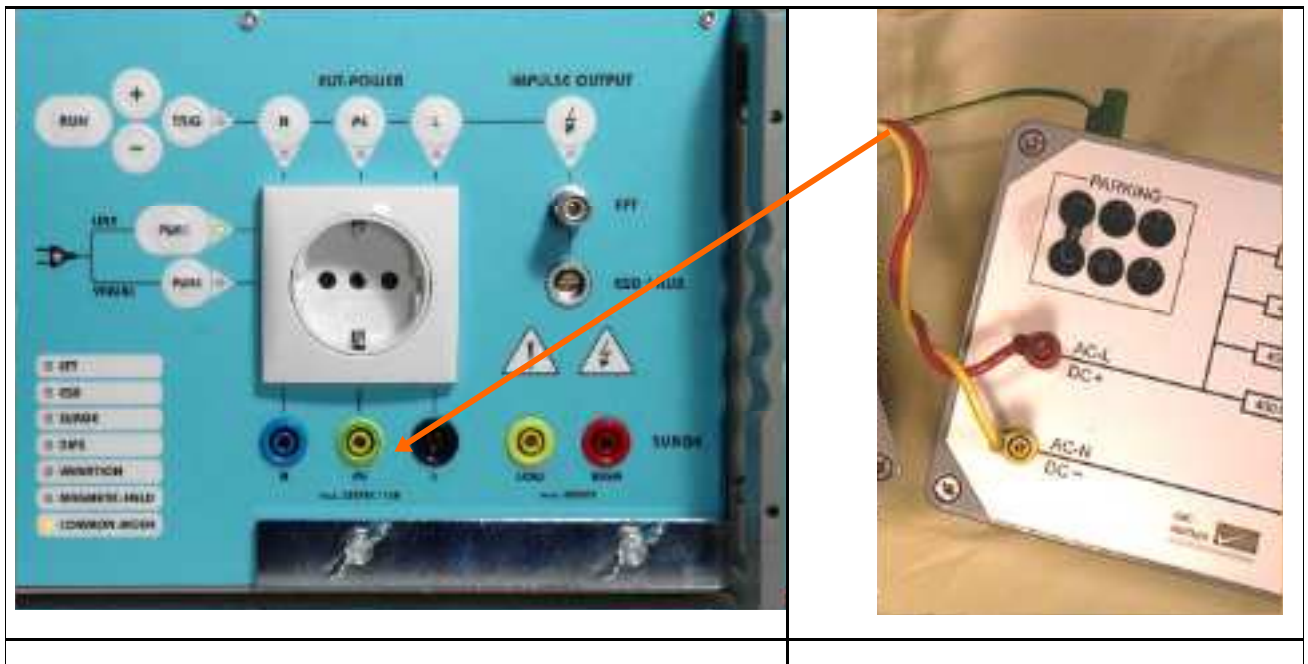
3 Connecting CN16T to TRA3000 C

3.1 General

Use the three cables (red, yellow and yellow/green) supplied to connect the CN16T to the TRA3000 C

For common mode tests connect the CN16T 'AC-L' and 'AC-N' to the TRA3000 C 'EUT Power L' and 'EUT Power-N' (as shown on the following picture for example).

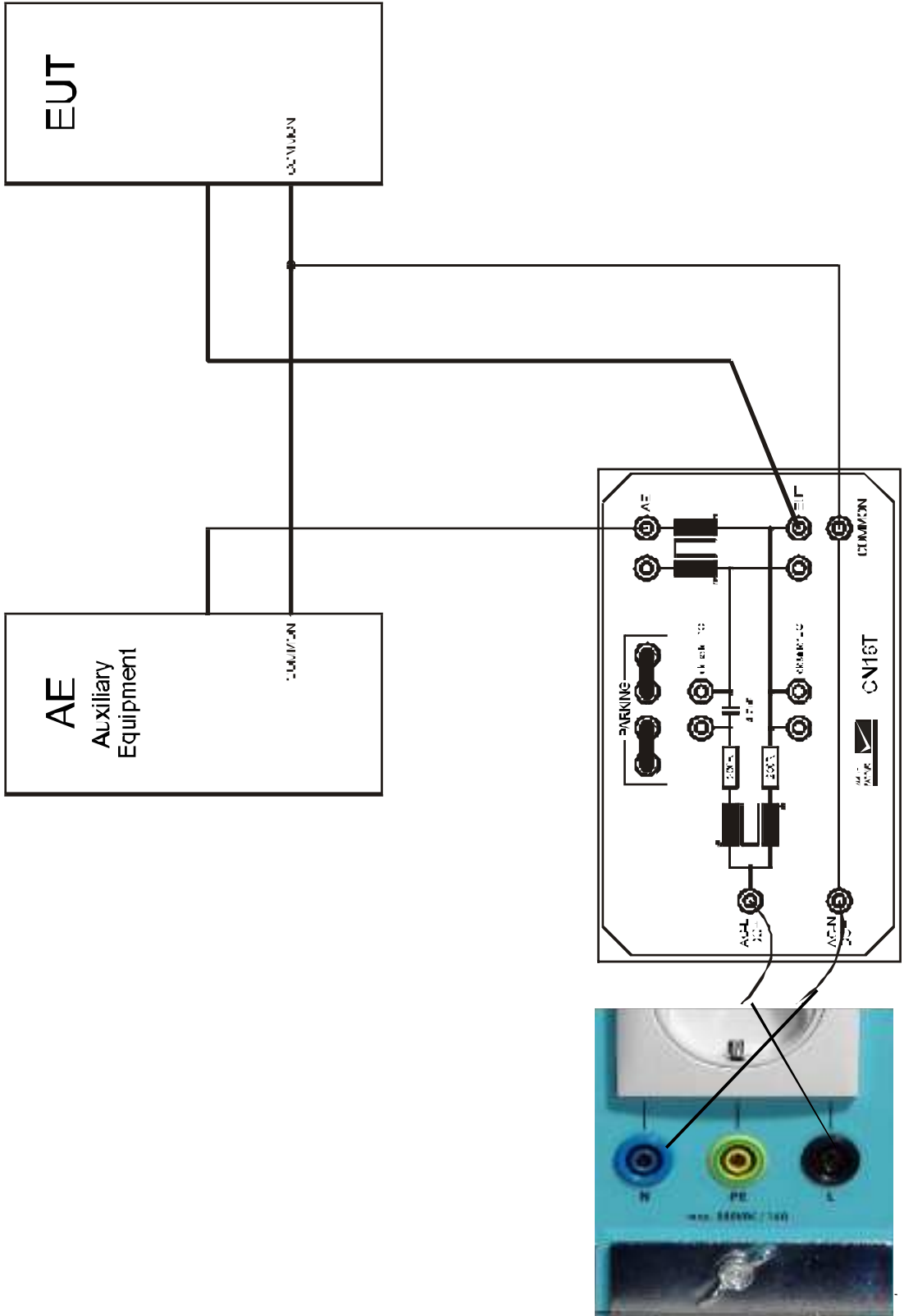
The metallic box of the CN16T must be connected to the PE of the TRA3000



4 AC-Voltage Test

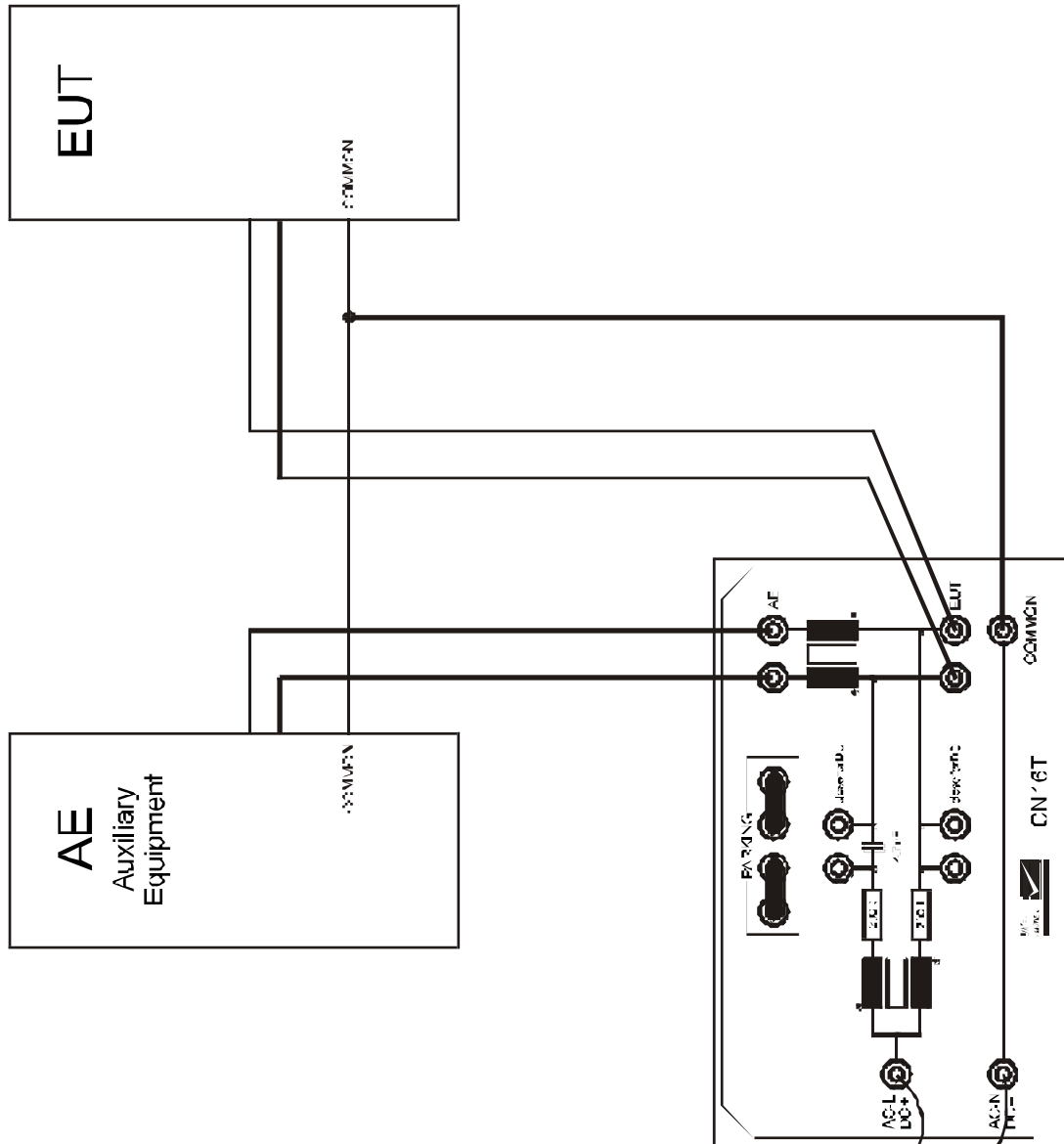
4.1 Coupling AC on one line

Connect the cables and bridges as shown on the following picture:



4.2 Coupling AC on two lines

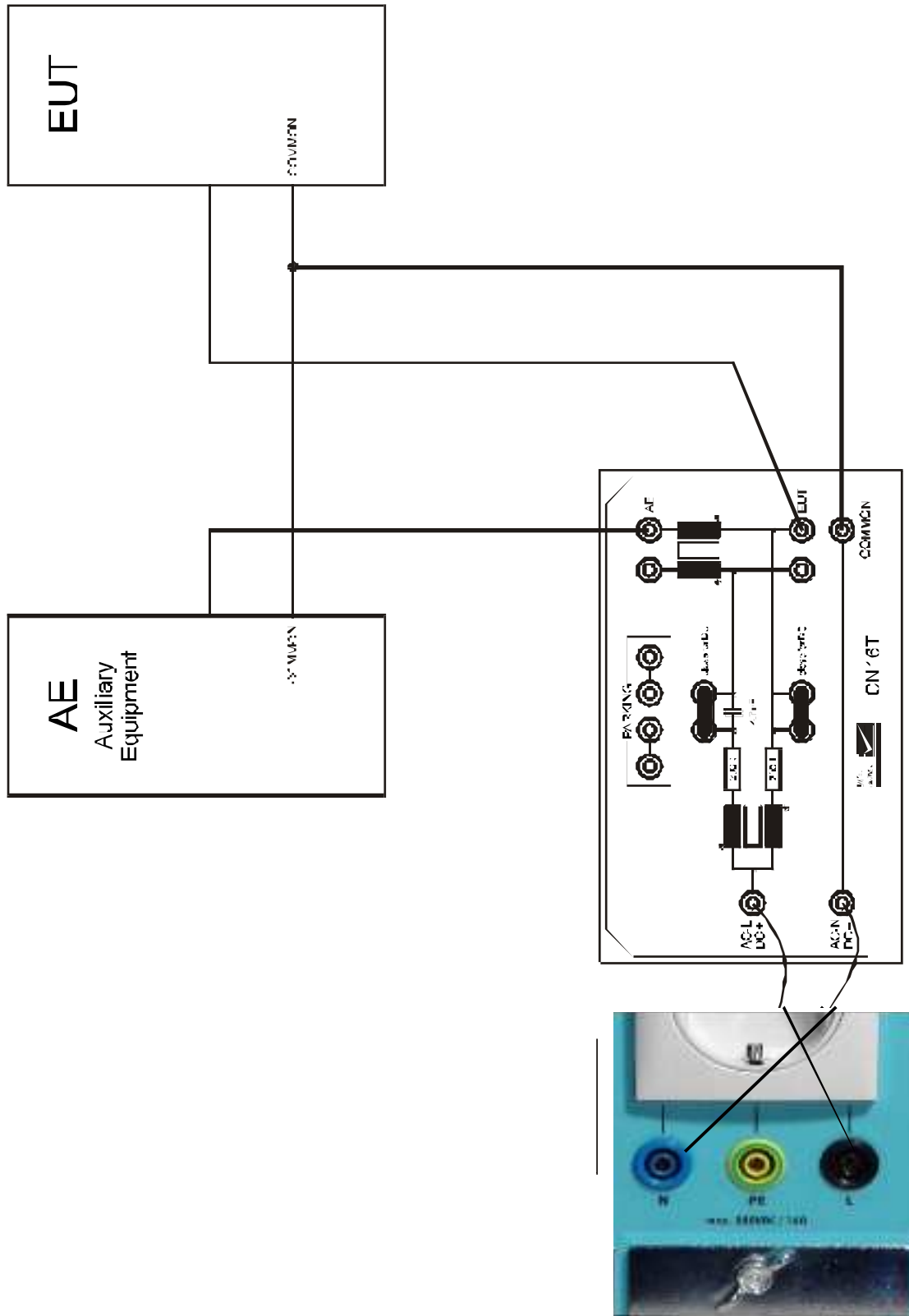
Connect the cables and bridges as shown on the following picture:



5 DC-Voltage Test

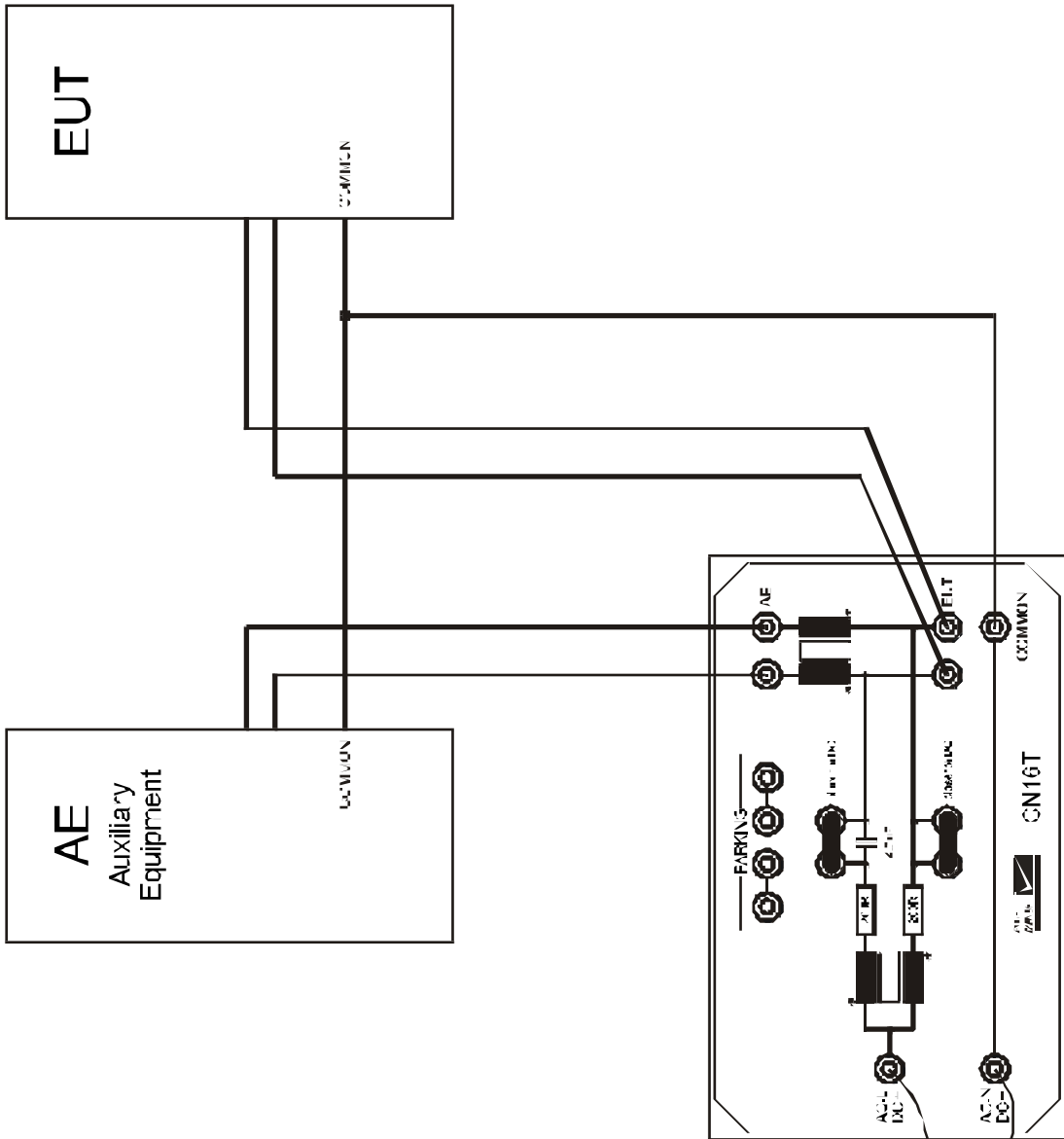
5.1 Coupling DC on one line

Connect the cables and bridges as shown on the following picture:



5.2 Coupling DC on two lines

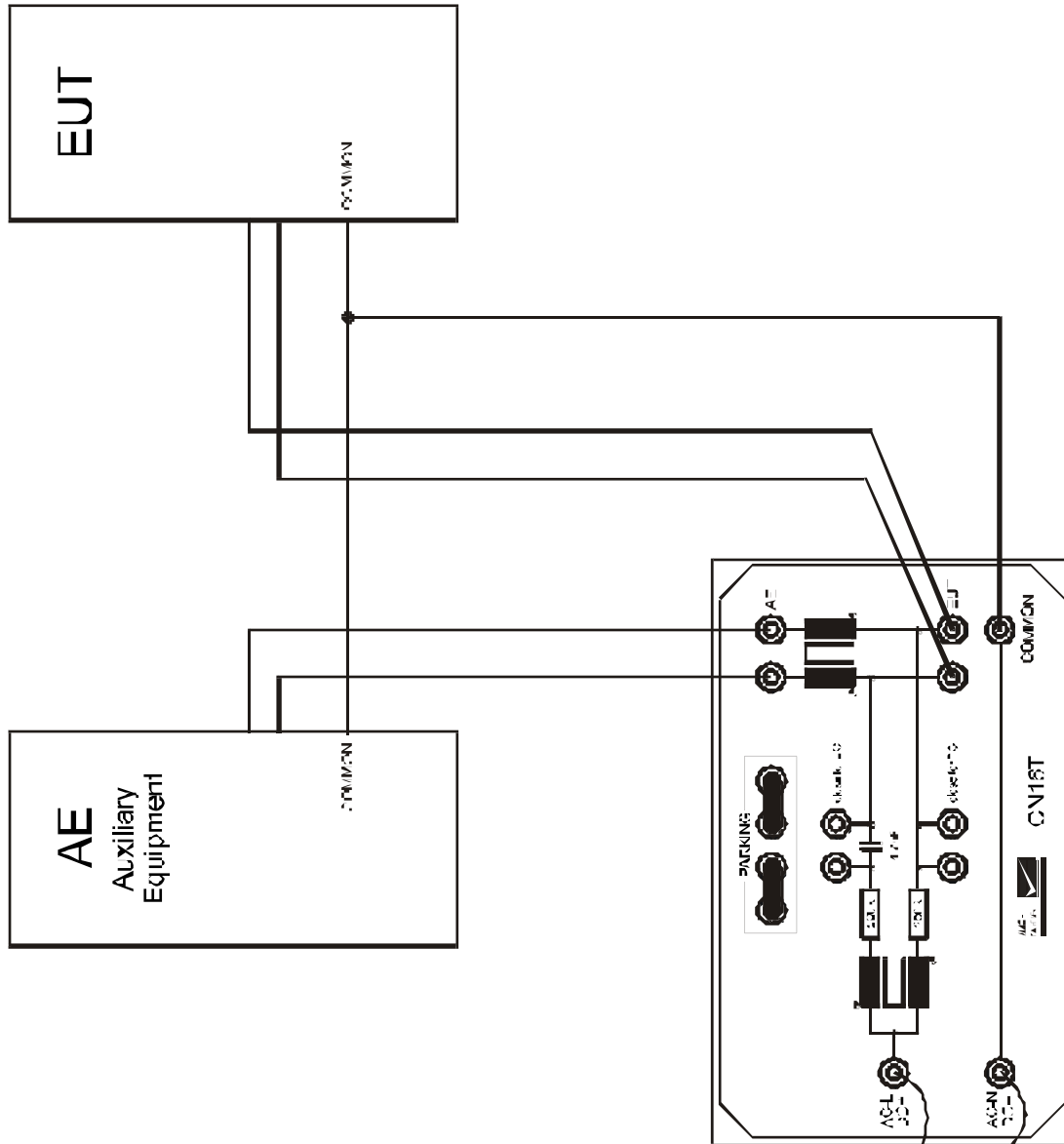
Connect the cables and bridges as shown on the following picture:



6 1 Hz to 150 kHz tests

6.1 Coupling 1 Hz to 1 kHz on two line

Connect the cables and bridges as shown on the following picture:



7 Recycling / Disposal

7.1 RoHS directive 2002/95/EG

The CN16T complies with the directive 2002/95 EG (RoHS - Restriction of certain Hazardous Substances).

From December 2005, all EMC Partner products either hand soldered or by machine are produced using lead-free solder.

7.2 WEEE directive 2002/96/EG

The EMC Partner CN16T, is exempted from the directive 2002/96 EG (WEEE) under category 9.

The product should be recycled through a professional organisation with appropriate experience for the disposal and recycling of electronic products. EMC Partner are also available to help with questions relating to the recycling of this product.

7.3 Information for dismantling



Remove always power cord first.

There is no special danger involved in dismantling the CN16T.

7.4 Parts which can be recycled





The CN16T contains parts made from steel, aluminium, PVC, two-component sealing compound. The impulse capacitors are filled with non-poisonous mineral oil. The various parts can be separated and recycled.

7.5 Parts which can not be recycled

All parts in the CN16T can be recycled.

8 Service Information

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Switzerland

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 service@emc-partner.ch
 www.emc-partner.com





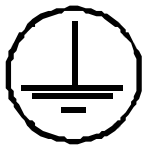
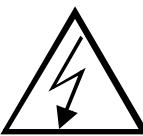

9 Glossary

Wherever possible, definitions in accordance with IEC 50 (IEV 161) are used.

FUT	Equipment under Test.
EST	French abbreviation of EUT.
EMV = EMC = CEM	Electro Magnetic Compatibility German: Elektromagnetische Verträglichkeit; French: =compatibilité électromagnétique.
Hybrid pulse	Voltage at no load 1.2 50 μ s and current at short circuit: 8 20 μ s.
CWG	Definition in IEC 1000-4-5 used for surge tester Combination Wave Generator.
Coupling network	Electric circuit for transferring energy with low losses from one circuit into another circuit.
Decoupling network	Electric circuit to prevent transmitting energy from one circuit into another circuit.
CDN coupling decoupling network (single or three phase unit)	Consists of a coupling and a de-coupling network.
EFT	Electric Fast Transient (switched inductance).
ESD	Electric Static Discharge.
SURGE	Transients with high energy content with relatively low frequency content as produced by lightning and switching of power lines.
DIP	Short voltage interruption or short voltage drop.
IEC	International standardisation organisation for electronic technology.
VARIAC	Voltage variable transformer.
SPIKE	One pulse of the burst.
CRO	Oscilloscope.
HV	High Voltage.
rms.	Root mean square; effective value.
Clamping voltage	Peak voltage across the varistor measured under condition of a specified V_c pulse current and specified waveform.
Rated Peak Single Pulse Transient Currents	Maximum peak current which may be applied for a single 8/20 μ s impulse.
Lifetime Rated Pulse Currents	Derated values of I for multiple impulses which may be applied over device rated lifetime.
Rated RMS voltage	Maximum continuous sinusoidal RMS voltage which may be applied.
Rated DC voltage	Maximum continuous DC voltage which may be applied.
Insulation test	The voltage waveform is relevant.
Energy test:	The current waveform is relevant.
Combination test	The voltage and current waveform is relevant.

Common mode coupling network CN16T

Used symbols:

	Direct current:
	Alternating current
	Three phase alternating current
	Earth (ground) terminal
	Protective conductor terminal IEC 417, No. 5019
	Caution, risk of electric shock ISO 3864, No. B.3.6
	Caution (refer to accompanying documents) ISO 3864, No. B.3.1



Multi-Contact AG Basel
 Stockumerstr. 8
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 CH-4123 Allschwil 1
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Multi-Contact Deutschland GmbH
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 Postfach 1839
 D-70551 Weil am Rhein
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 Fax: 07141/8371100

Multi-Contact France S.A.
 4, rue de l'Industrie
 Zone industrielle
 F-68230 Hengwiller
 Tel.: 03 67 65 73
 Fax: 03 67 27 66

Montageanleitung

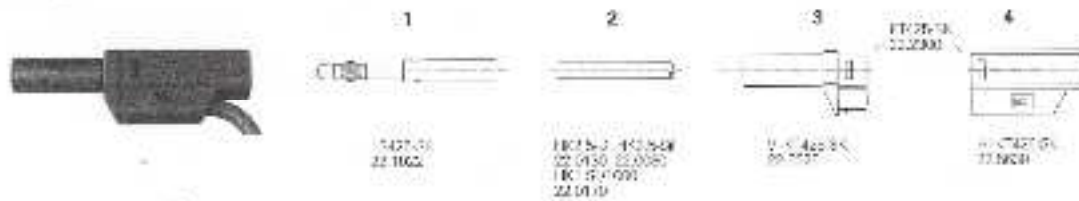
Sicherheitsverbindungsleitungen
SLK425-K, SLK425-K SII, SLK410-K SII
 Bei der Benutzung von anderen als von MC[®] angegebener Einzelteile und Werkzeuge, sowie bei Abweichung der hier beschriebenen Vorgänge, ist Vorbereitung und Montage, kann bei der Sicherheitsleistung sowie die Sicherheit, nach der Einhaltung der technischen Daten gewährleistet werden. Sichernleitungen sollten konformisiert bei MC[®] bezogen werden.


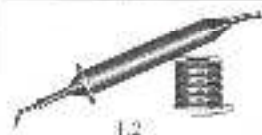
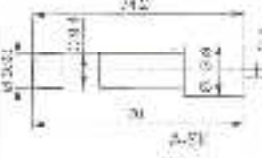
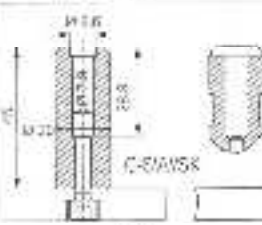
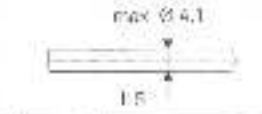
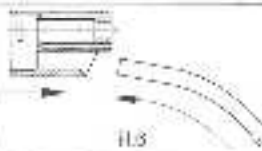
Assembly instructions

Safety Connecting Leads
SLK425-K, SLK425-K SII, SLK410-K SII
 The use of parts, tools and preparation other than those stated by MC[®] can have an effect on the safety and quality of the do-it-yourself leads, and therefore the technical data cannot be guaranteed. We recommend leads made with silicon cable ready made from MC[®].

Instructions de montage

Cordons de sécurité
SLK425-K, SLK425-K SII, SLK410-K SII
 Lors du montage, personnellement, de composants, des méthodes de montage ou des outillages, autres que ceux présentés par MC[®] sont utilisés, les règles de sécurité ainsi que le respect des caractéristiques techniques ne sauraient être garantis. Il est conseillé de commander les cordons en silicone à l'état fini à MC[®].



	Notwendiges Werkzeug	Tools required	Outillage nécessaire
 II.1	II.1) Abisolierzange "Stirolex" Bestell-Nr. 28.0013	II.1) Cable stripper "Stirolex" Order No. 25.0013	II.1) Pinces à dénuder "Stirolex" No. de Cat. 25.0013
 II.2	II.2) Lötlötlampe 60 W - Lötzinn - R. Fluss 0,15 mm DIN 9516 (L-590PbCuZn)	II.2) - Soldering iron 60 W - Solder e.g. Cast 0,15 mm DIN 9516 (L-590PbCuZn)	II.2) - Fer à souder 60 W - Fil de soudure p.e. Flux 0,15 mm DIN 9516 (L-590PbCuZn)
 II.3	II.3) Hilfswerkzeug A-SK Empfohlenes Material: Stahl	II.3) Auxiliary tool A-SK Recommended material: Steel	II.3) Outil A-SK Matériau recommandé: Acier
 II.4	II.4) Hilfswerkzeug C-SW5K Empfohlenes Material: Messing	II.4) Auxiliary tool C-SW5K Recommended material: Brass	II.4) Outil C-SW5K Matériau recommandé: Laiton
 II.5	Vorbereitung der Leitung II.5) Leitung 2er eingewickelte Normkabelstränge	Preparation of the cable II.5) On the cable 2 to the desired working length	Préparation du câble II.5) Couper le câble 2 à la longueur prévue.
 II.6	II.6) Leitung 2 durch Isolations- schichten	II.6) Feed cable 2 through Insulator 4	II.6) Glisser le câble 2 à travers l'isolant 4.



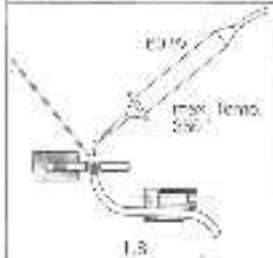
Multiconcept



ILL. 7
Leitung mit 3 mm Isolierung
in Flange L = 3 mm
einstecken.

ILL. 7
Strip cable insulation to
length L = 3 mm with cable
stripper.

ILL. 7
Câble avec isolation de
longueur L = 3 mm à insérer
dans le connecteur.



ILL. 8
Leitung 2 in Steckverbinder
einstecken. Beim Löten kein übermäßiges
Wärme einbringen. Die maximale
Löttemperatur 350°C nicht
übersteigen.

ILL. 8
Secure cable 2 in plug 1.
When soldering the plug
should not get too hot
because of the max. allowed
soldering temp. 350°C max.

ILL. 8
Secure cable 2 into plug
1. Do not use excessive
temperature. Do not get too
excessive a temperature to
avoid damage. Max.
temperature do not exceed 350

Stecker und Kontakte müssen
vollständig ausgedünnt sein.
Sollt.

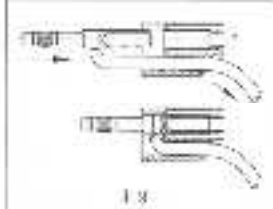
Plug and socket area should
be free from excess solder.

Le ficher et l'inductance
soudure doivent être
exempt de résidu de
soudure.

MC²-Empfehlung:
Ein Block mit Bohrung
Ø 4,2 mm H30 con Stecker 1
benutzen (siehe Text).

MC²-Recommendation:
For soldering purposes a
block with a drilled hole
Ø 4.2 mm should be used to
hold the plug in position.

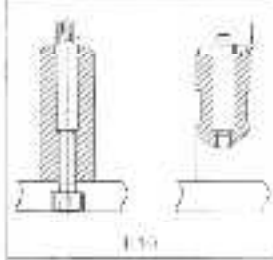
Recommendation MC²:
Utiliser un bloc avec une
perçure Ø 4.2 mm pour
maintenir le ficher 1 en place
pendant la soudure.



ILL. 9
Stecker 1 stecken in isolierte 14
und löten in 14 gleichzeitig.
Die Länge ist 3 mm einstecken.

ILL. 9
Push plug 1 back into insu-
lator 14 and at the same time
solder up the wires.

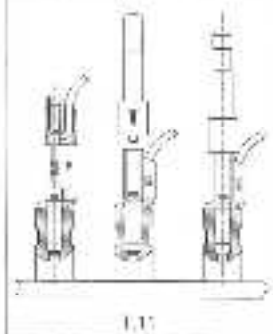
ILL. 9
Insérer le ficher 1 dans
l'isolant 14 et souder les
câbles simultanément.



ILL. 10
Stecker 1 in H30 einstecken
Ø 3/25/50K einstecken.

ILL. 10
Push insulator 3 into the
auxiliary hole Ø 3/25/50K.

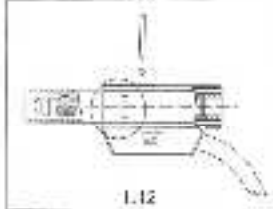
ILL. 10
Mettre l'isolant 3 dans l'ouvert
Ø 3/25/50K.



ILL. 11
Stecker 1 in 14 einstecken
und in 14 gleichzeitig
löten. Die Länge ist 3 mm einstecken.
Die Länge ist 3 mm einstecken.
Die Länge ist 3 mm einstecken.

ILL. 11
Push insulator 3 into 14
and insulator 3 into 14
simultaneously. The length
is 3 mm. Push the
insulator 3 into 14 and
solder into 14.

ILL. 11
Insérer l'isolant 3 en 14 et
le ficher 1 en 14
simultanément. La
longueur est de 3 mm.
Insérer l'isolant 3 dans
l'ouvert Ø 3/25/50K.



ILL. 12
Einstecken in 14 einstecken

ILL. 12
Control step in

ILL. 12
Contrôle de l'assemblage

MA 105

For further information, please contact your local distributor.
Contact your local distributor for further information.