UNITEST®

UNI*dreh 700*	**Best.-Nr. / Cat. No. / Réf. 9039**
UNI*dreh LCD*	**Best.-Nr. / Cat. No. / Réf. 9040**
UNI*dreh EVU*	**Best.-Nr. / Cat. No. / Réf. 9041**
DR 705	**Best.-Nr. / Cat. No. / Réf. 9043**

Drehfeldrichtungsanzeiger
Phase Rotation Indicator
Contrôleur d'ordre des phases

(D) Bedienungsanleitung
(GB) Instruction Manual
(F) Mode d'emploi

UNITEST®

Phase Rotation Indicator

UNI*dreh 700* **Cat. No. 9039**
UNI*dreh LCD* **Cat. No. 9040**
UNI*dreh EVU* **Cat. No. 9041**
DR 705 **Cat. No. 9043**

(GB) Instructions Manual

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1.0 Brief Description / Scope of Supply

The hand-held UNITEST Phase Rotation Indicators are applicable in various areas and different mains voltage. The test instruments are built in compliance with the most recent safety regulations and ensure safe and reliable testing.

- Display of all three phases via LED/LCD-Segments
- Display of phase rotation direction via LED/LCD-Segments
- Including measurement leads with safety plugs
- Voltage range 40 … 700 V (UNI*dreh 700* 70 … 700 V)
- Voltage range 80 … 440 V (DR 705)
- Frequency Range 15 … 400 Hz (DR 705 50 … 60 Hz)
- UNIdreh EVU version with built-in fuses

References and symbols marked on the instrument:

⚠ **Attention !** Warning, danger. See instruction manual.

⚠ **Caution !** Dangerous voltages.

⧈ Double insulated housing Class II IEC 536

CE Conformity symbol, conforms with the valid EMC Directive (89/336/EEC). Standards EN 50081-1: 1992 and EN 50082-1: 1997 and the Low Voltage Directive (73/23/EEC) with Standard EN 61010-1: 1995 are complied with.

The instruments are supplied with the test leads. After unpacking, check that the instruments and the accessories are complete.

Scope of Supply:

1. UNITEST Phase Rotation Indicator UNI*dreh 700* or UNI*dreh LCD,* UNI*dreh EVU, DR 705*
2. Instruction Manual

Accessoires Cat. No. 1133:

3 Test Probes
1 Test clamp

Please observe: Model UNI*dreh 700* is also available as set with three cekon adapters for phase rotation determination for cekon sockets. Cat. No. 9007.
Please also refer to the our main catalogue including a large selection of practical and low-cost measuring instruments.

2.0 Operator's Safety

The UNITEST Phase Rotation Indicators are built and tested in compliance with the safety regulations for Electronic Measuring Instruments EN 61010-1 and leave our factory in safe and perfect condition. To maintain this condition the operator has to respect the safety measures contained in this instruction manual.

The instruction manual contains information and warnings necessary for safe instrument operation and .

Prior to using the instrument read this instruction manual thoroughly.

Failure to understand this instruction manual and to comply with the warnings and references can result in serious and hazardous injuries or damages.

⚠ **Attention !** In order to avoid electrical shock: The safety measures have to be respected when working with voltages exceeding 120 V (60 V) DC or 50 V (25 V)rms AC. According to DIN VDE these voltages represent the threshold contact voltages .
Please note: The values indicated in brackets are valid for limited ranges such as in hospitals or on farms.

⚠ Prior to measurement ensure that the test leads and instrument are in perfect condition.

⚠ The measurement instrument is only to be used for the specified measurement ranges.

If the operator's safety is no longer ensured the instrument is to be put out of service and protected against use.

The safety is no longer ensured if the instrument:

- shows obvious damages
- does not carry out the desired measurements
- has been stored for too long under unfavorable conditions
- has been subjected to mechanical stress during transport.

⚠ Prior to opening, disconnect the instrument from all measurement circuits.

⚠ Any interventions such as fuse replacement may only be carried out by authorized personnel.

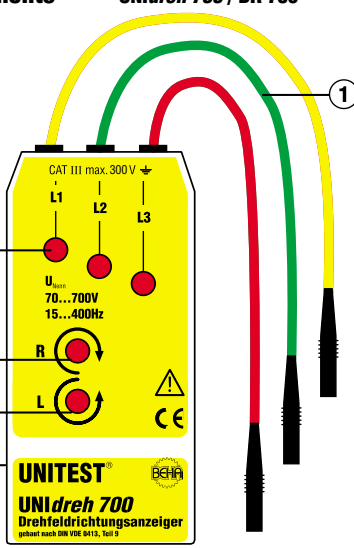
Health and Safety Regulations pertaining to Electrical Systems must be strictly observed for all tasks.

To ensure correct functioning and long life cycle of the instrument avoid exposure to direct sunlight.

3.0 Control Elements

UNI*dreh 700* / DR 705

1. Connecting lines with safety plugs
2. LED's/glow lamps for phas indication L1, L2, L3
3. LED/glow lamp for clock-wis rotary phase indication
4. LED/glow lamp for anti-clockwise rotary phase indication
5. Brief instructions on instrument rear



UNI*dreh LCD* / UNI*dreh EVU*

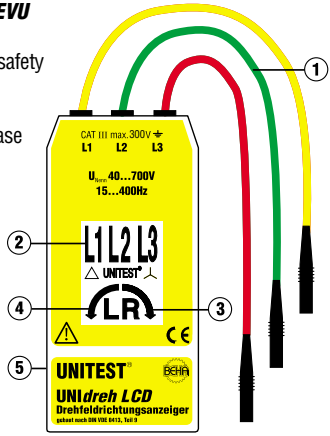
1. Connecting lines with safety plugs.

2. LCD-Segments for phase indication L1, L2, L3.

3. LCD-Segments for clockwise rotary phase indication.

4. LCD-Segments for anti-clockwise rotary phase indication.

5. Brief instructions on instrument rear.



4.0 Determination of the Rotary Field

The phase sequence of the three phases present determines the rotary direction of the motor connected. The correct phase sequence L1, L2, L3 results in a clockwise rotation.
For phase sequence determination connect the three clamps L1, L2, L3 in any order to the three phase system. LED/LCD-Segment (3) is illuminated for a clockwise rotary field. If LED/LCD-Segment (2) is illuminated, exchange two connections.

Please also refer to table at the backside of the unit

phase indication/ phase rotary indication	↻	↺	L1	L2	L3
phase rotation right	○	⊗	⊗	⊗	⊗
phase rotation left	⊗	○	⊗	⊗	⊗
L1 missing	○	○	○	⊗	⊗
L2 missing	○	○	⊗	○	⊗
L3 missing	○	○	⊗	⊗	○

Correct phase sequence is displayed even if neutral N is connected instead of L1, L2 or L3. Correct phase connection has to be verified by two-pole voltage test.

5.0 Maintenance

When using the instrument in compliance with the instruction manual no special maintenance is required.

5.1 Cleaning
If the instrument is dirty after usage, it is advised to clean it by using a humid cloth and mild household detergents. Never use acid detergents or dissolvants.

5.2 Fuse replacement (UNIdreh EVU only)

The UNIdreh EVU has fixed measuring lines and test probes with built-in fuses 0,5 A / 500 V, 6 x 32 mm.

The front part of the test probe is screwed together with the handheld part. The fuse can be taken after solving the bolted joint.

⚠ Attention !
Ensure that the fuses are in perfect condition and correctly positioned in fuse holder.

Fuse 500 mA / 500 V, 56 kA cut-off capacity, 6,3 x 32 mm

⚠ Attention !
In order to avoid fire hazard only use the correct fuse with characteristics regarding type, voltage and cut off as specified in the instruction manual. The use of auxiliary fuses especially short-circuiting of fuse holders is strictly forbidden.

6.0 Specifications

	UNI*dreh 700*	**UNI*dreh LCD*/UNI*dreh EVU***
Phase indication:	3 LED's	LCD-Segment L1, L2, L3
Rotary field indication:	2 LED	LCD Segments R, L
Voltage range:	70 … 700 V 3 ;	40…700 V ;
Frequency:	15 … 400 Hz	
Operation:	continuous operation	
Current pick-up:	approx. 3 mA	approx. 1 mA
Overvoltage class:	CAT III, 500 V to ground	
Pollution degree:	2	
Temperature range:	0 … 40° C	
Protection:	IP 40	
Test voltage:	2 kV	
Dimensions:	approx. 124 x 61 x 27 mm	
Weight:	approx. 200 g	approx. 200 g (UNIdreh EVU approx. 350 g)

	DR 705
Phase indication:	3 glow lamps L1, L2, L3
Rotation Field:	2 glow lamps
Voltage range:	Rotation Field: 80 … 440 V
	Phase: 190 … 440 V
Frequency:	50 … 60 Hz
Operation time:	continious
Current consumption:	< 3,5 mA
Overvoltage category:	CAT III, max. 300 V against ground
Pollution degree:	2
Test voltage:	2 kV
Temperature range:	0 … 40° C
Attitude:	up to 2000 m
Protection:	IP 40
Dimensions:	ca. 124 x 61 x 27 mm
Weight:	ca. 170 g

12 month warranty

UNITEST instruments are subject to strict quality control. However, should the instrument function improperly during normal use, you are protected by our 12 month warranty (valid only with invoice or receipt).

Within the warranty period we will decide whether to exchange or repair the defective instrument. We will repair free of charge any defects in workmanship of materials, provided the instrument is returned unopened and untampered with.

Damages due to dropping or incorrect handling are not covered by the warranty. If the instrument breaks down following expiry of warranty our service department can offer you a quick and economical repair facility.

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Reg. No. 3335

Great care has been taken in the compilation of this Instruction Manual. However, we cannot guarantee the correctness and completeness of the data, figures or drawings contained herein.

Subject to technical changes without notice ! 08.98 PTDB 9039-03