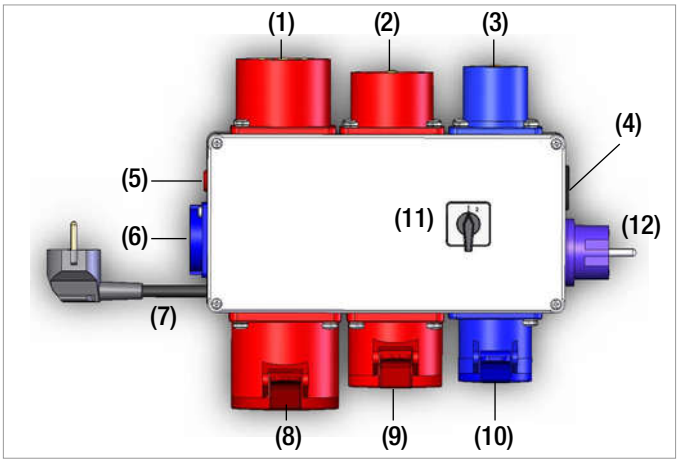
GOSSEN METRAWATT
GMC-INSTRUMENTS GROUP

VL2 E (Z745W) / VL2 E CH (Z744B) Test Adapter
For Testing Devices and Cables in Combination with Test Instruments for EN 50678 and EN 50699

3-349-242-15
12/5.24



(1) Surface mounted test plug: CEE 3P+N+PE 32 A 400 V
(2) Surface mounted test plug: CEE 3P+N+PE 16 A 400 V
(3) Surface mounted test plug: CEE 1P+N+PE 16 A 230 V
(4) Surface mounted inlet test plug: 1P+N+PE 16 A 230 V
(5) Connector socket for probe cable from the DIN VDE test instrument, for testing cables only
(6) Surface mounted earth-contact test socket: 1P+N+PE 16 A 230 V / CH: 16 A, 230 V
(7) Earth-contact connector cable for connection to test sockets at DIN VDE test instruments, 16 A 230 V / CH: 10 A, 230 V
(8) Surface mounted test socket: CEE 3P+N+PE 32 A 400 V
(9) Surface mounted test socket: CEE 3P+N+PE 16 A 400 V
(10) Surface mounted test socket: CEE 1P+N+PE 16 A 230 V
(11) Rotary selector switch for cable function tests
(12) Surface mounted earth-contact test plug: 1P+N+PE 16A 230 V / CH: 10 A, 230 V

Symbols on the Instrument

Warning concerning a point of danger (attention, observe documentation!)

300 V CAT II Measuring category II device

European conformity marking

The device may not be disposed of with household trash. You are required to comply with all applicable local regulations.

1 Safety Precautions

The test adapter has been manufactured and tested in accordance with the following regulation: DIN EN 61010-1 VDE 0411-1
"Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements"
Safety is only assured for the user and the test adapter when used for its intended purpose in combination with test instruments. In order to maintain flawless technical safety conditions, and to assure safe use, it is imperative that you read these operating instructions thoroughly and carefully before placing the test adapter into service, and that you follow all instructions contained herein.

- Measurements within electrical systems are prohibited!

Attention!
The VL2 E test adapter may only be connected via its cable to the test socket of the external test instrument (7) for tests performed without mains voltage. If connected to a test panel with "VDE MAINS" switching, for example, the switch must be in the "VDE" position because the RCD in the power supply system may otherwise trip, for example.

- Be prepared for the occurrence of unexpected voltages at devices under test (e.g. due to charged capacitors).
- Before connecting the device under test to the test adapter, subject it to a thorough visual inspection first. Damaged devices under test must be repaired prior to testing.
- Only extension cables which have been plugged into the test sockets at the test adapter may be connected to the surface mount plugs on the test adapter for testing.
- In order to assure compliance with technical safety requirements, the test adapter may only be repaired by a qualified electrician, who is preferably employed by the manufacturer.
- If the test adapter and/or its connector cables demonstrate visible damage, no longer function or have been stored for a lengthy period of time under unfavorable conditions, it must be assumed that hazard-free operation is no longer possible. Remove the test adapter from service and secure it against inadvertent use.

2 Applications

2.1 Intended Use / Use for Intended Purpose

The test adapter is intended for the performance of measurements and tests at electrical devices and extension cables with CEE plug connectors in combination with test instruments in accordance with regulations for the periodic testing and repair of electrical devices.
Safety of the user, as well as that of the instrument, is only assured when it's used for its intended purpose.

2.2 Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in these instrument operating instructions constitutes improper use. Use for purposes other than those intended may result in unforeseeable damage!

2.3 Liability and Guarantee

The warranty provided by Gossen Metrawatt GmbH, and its liability, are governed by the applicable contractual and mandatory statutory provisions.

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3 Connecting the Test Adapter to a Test Instrument

➪ The test adapter's earth-contact plug may only be plugged into the earth-contact outlet at a test instrument which is identified as the test socket.

Testing Extension Cables

➪ Additionally plug the test instrument's probe into the SL socket (5).

4 Connecting a Device Under Test to the Test Adapter

After the visual inspection has been passed and before plugging the device under test in to the appropriate connectors, all functions must be activated, making sure, for example, that thermostat contacts are closed etc. Always measure protective conductor resistance first for protection category I devices under test, because the measurement of insulation resistance and equivalent leakage current is not possible without a properly functioning protective conductor.

This measurement is of special importance for function testing as well, because a defective or reversed protective conductor may represent a hazard for the user!

5 Testing Devices

The following tests in accordance with DIN VDE must be performed in consideration of the operating instructions for the utilized test instrument.

5.1 Measuring Protective Conductor Resistance

➪ **When testing devices:** connect the probe cable to the housing of the DUT, making sure that good contact is established.

➪ **When testing extension cables:** plug the test instrument's probe into the SL socket (5). Connect the plug and the socket of the extension cable under test to the corresponding surface mount plug and surface mount socket on the test adapter.

➪ Perform testing in accordance with the operating instructions included with the test instrument.

➪ Read the measured value and compare it with the permissible values specified in the standard.

Attention!
The connector cable must be shaken back and forth, section by section over its entire length, during measurement (for permanently installed devices only in so far as the connector cable is accessible during maintenance, modification or testing).

Compensation of Test Adapter's Connector Cable Resistance

Cable resistance amounts to approximately 0.1 Ω. This value must be subtracted from the displayed measured value for measurements in extreme ranges.

Note
Perform zero offsetting at your test instrument in order to compensate for the resistance of the test adapter's connector cable.

5.2 Measurement of Insulation Resistance

During this test, L1, L2, L3 and N are measured against PE (rotary selector switch set to position 1).

➪ Perform testing in accordance with the operating instructions included with the test instrument.

➪ Read the measured value and compare it with the permissible values specified in the standard. When testing extension cables, a value of 20 MΩ should not be fallen short of.

Note
If there's any uncertainty about applying insulation voltage, for example with electronic devices, or, in the case of protection category I devices, if there's no assurance that all components subjected to line voltage will be taken into account by the measurement, the DUT must be tested using a leakage current measuring method with a suitable test instrument.

5.3 Measuring Equivalent Leakage Current

➪ Perform testing in accordance with the operating instructions included with the test instrument.

➪ Read the measured value and compare it with the permissible values specified in the standard.

6 Function Test for Extension Cables

➪ Select insulation measurement at the test instrument.

➪ Set and hold the rotary switch to position 2 during the test.

➪ Read the measured value.
The display can settle in within a range of 0 Ω if all cores are short-circuited up to, for example, infinity (in the event of overload) if one of the cores is interrupted. Due to the good insulation assured by undamaged cables, a test value of 7 MΩ with a tolerance of 10% has been established for this rational test procedure. All values within a range of 6.3 to 7.7 MΩ thus indicate that the test has been passed.
In the event of an error, the actual defect must be determined (i.e. core short-circuiting, core interruption, core reversal or too little insulation).

The following characteristics can be tested with this procedure:

➪ Testing of AC cables for short-circuiting and continuity

and

➪ Additional testing of 3-phase cables and caravan cables for reversed wiring of L1, L2, L3 and N (clockwise rotation).

Note
In the case of cables with indicator lamp (usually a glow lamp in the switch), the results of the continuity test for L and N may be distorted due to additional resistance caused by the glow lamp.
In case of doubt, perform a continuity test for L and N by means of resistance measurement (R-PE or R-INS).

Attention!
After testing, do not touch the plug contacts of the connector plugs of long connector cables. They may be electrically charged.

7 Characteristic Values

Nominal Range of Use

Maximum voltage	for measurement of insulation resistance	600 V DC
	for measurement of equivalent leakage current	230 V AC
Maximum current	for the measurement of protective conductor resistance	10 A DC/AC

Electrical Safety

Protection class	I
Measuring category	I for insulation resistance measurement and 300 V CAT II for the other measurements

Ambient Conditions

Storage temperature	– 20 °C … + 60 °C
Operating temperature	– 10 °C … + 50 °C
Accuracy range	0 °C … + 50 °C
Relative humidity	Max. 75%, no condensation allowed
Elevation	Max. 2000 m
Place of use	Indoors, except within specified ambient conditions

Mechanical Design

Protection	Housing: IP 40 per DIN VDE 0470, part 1 Connectors: IP 20
Dimensions	W × H × D: Approx. 330 × 230 × 145 mm
Weight	Approx. 1.7 kg

8 Maintenance

Self-Test

Self-testing for protective conductor continuity at the connector cable is performed automatically for all VDE tests.

Housing

No special maintenance is required for the housing. Keep outside surfaces clean. Use a slightly dampened cloth for cleaning. Avoid the use of cleansers, abrasives and solvents.

9 Contact, Support and Service

Gossen Metrawatt GmbH can be contacted directly and conveniently – we have a single number for everything! Whether you require support or training, or have an individual inquiry, we can answer all of your questions here:

+49-911-8602-0	Monday to Thursday: Friday:	8 a.m. to 4 p.m. 8 a.m. to 2 p.m.
Or contact us by e-mail at:	info@gossenmetrawatt.com	

Do you prefer support by e-mail?

Measuring and Test Technology:	support@gossenmetrawatt.com
Industrial Measuring Technology:	support.industrie@gossenmetrawatt.com

Enquiries concerning training and seminars can also be submitted by e-mail and online:

training@gossenmetrawatt.com

https://www.gossenmetrawatt.com/training

Please contact GMC-I Service GmbH for repairs, replacement parts and calibration [1]:

+49-911-817718-0

service@gossenmetrawatt.com

www.gmci-service.com

Beuthener Str. 41
D-90471 Nürnberg
Germany

[1] DAkkS calibration laboratory per DIN EN ISO/IEC 17025 accredited by the Deutsche Akkreditierungsstelle GmbH under reference number D-K-15080-01-01.

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