i SCOPE

This manual is intended to provide the required information to facilitate the installation and use of the RLL Instruments VolksMeter II Seismometer/Tiltmeter.

Chapter 1, Introduction describes the VolksMeter II package; the hardware, software and accessories...what it is, what it does, what you can do with it. The required user-provided components, such as the support computer and the network connection, are listed. The technical specifications of the VolksMeter II are here.

Chapter 2, Installation, tells you how to unpack the instrument and prepare it for use. Site suggestions and requirements are here. Installing the included software on the support computer is described. Initial testing and setup of the optional GPS time standard are specified in this section.

Chapter 3, Software Setup For Operation, describes in detail how to configure the software for long-term seismic recording. Issues including site-specific initialization, software filtering, data management and long-term logging of are all discussed.

Chapter 4, Using The VolksMeter, discusses what you can do with the recorded data. Analysis, Display and Data Conversion using the included software, WinSDR and WinQuake are described. Also, analysis with user-provided software, such as Excel, is described.

Appendix 1, Theory Of Operation, tells you how the VolksMeter works, especially the physics behind the pendulum and the Symmetric Differential Capacitor sensor.

Appendix 2, Reference List, contains references and web links on seismology, the VolksMeter and the WinSDR/WinQuake software packages.

It is our goal at RLL Instruments to enable you to get the most out of this unique instrument. We welcome any suggestions for improving the hardware, software and documentation. Please email all questions and suggestions to: info@rllinstruments.com

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ii ACKNOWLEDGEMENTS

The following people contributed to the VolksMeter II development:

Dr. Randall Peters, Professor of Physics and Chairman of The Physics Department at Mercer University, Macon, Georgia holds the patent on the Symmetric Differential Capacitor and developed the original concept of the VolksMeter.

Les LaZar, President of Zoltech Corporation, Van Nuys, California, with the guidance of Dr. Peters, did the initial production engineering on the VolksMeter, including the electronic and mechanical designs. Les has also acted as Project Manager and Editor of this manual.

Larry Cochrane, President of Webtronics, Inc., Redwood City, California, is the author of WinSDR and WinQUAKE. He also did the circuit, pcb and firmware design of the Interface board that is incorporated in the VolksMeter II.

Randall, Les and Larry are the team behind RLL Instruments.

We would also like to acknowledge the invaluable assistance of Jim Shirley, John Lahr and Chris Chapman, who participated in the early evaluation of the VolksMeter prototypes and reviewed the documentation.

Please note that an acknowledgement of assistance does not constitute an endorsement by any of the people named.

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iii DISCLAIMERS/WARNINGS/NOTICES

The VolksMeter is not designed for, authorized or intended for use in life-critical or life-support applications where a failure of the product could result in property damage, personal injury or death.

RLL Instruments and Zoltech Corporation are not responsible for any consequential damages that may result from the use of this product. Our liability is limited to a refund of the purchase price.

Use of the VolksMeter will NOT protect you from the consequences of earthquakes, tsunamis, landslides, volcanic eruptions, pyroclastic flows, sinkholes or any other geophysical disaster, calamity, catastrophe or mishap.

The VolksMeter is an electrical device. It should not be used in a wet environment. Do not touch any bare wires or connectors when powered, severe electrical shock, resulting in injury or death could result.

When using the tools provided with the VolksMeter, appropriate protective eyewear, gloves and clothing should be worn. (E.g. Don't poke yourself or anyone else with the screwdriver!)

Trademarks and copyrights mentioned in this manual are the property of their respective owners.

The Symmetric Differential Capacitor technology used in the sensors of the VolksMeter is protected under U.S. Patent Number 5,461,319 and is used under license.

The WinSDR and WinQuake software are copyright by Webtronics, Inc.

The design of the VolksMeter instrument, its' components and this manual are copyright ©2006, 2007 by RLL Instruments / Zoltech Corporation.

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FCC Notice: When fully configured as an operational seismograph, this equipment generates, uses and can radiate radio frequency energy, and if not installed, maintained, and used in accordance with the instructions contained in the manuals of the various components, may cause interference with radio communications. The RLL Instruments VolksMeter II has been designed to comply with the limits of a Class B computing device pursuant to Subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause such interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.