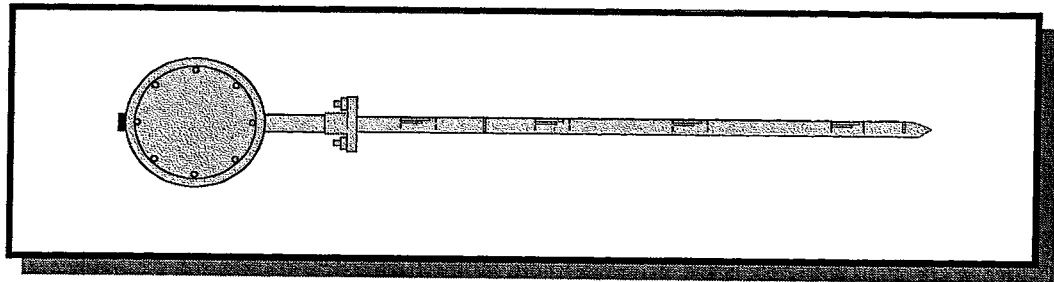

KURZ INSTRUMENTS™

K-BAR™

Multi-Point Insertion
Mass Flow Element

User's Guide

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1.**PREFACE**

The K-BAR™ Multi-Point Insertion Mass Flow Element offers advanced solutions for today's demanding mass flow measurement needs. It provides superb accuracy and response time.

Kurz Instruments™ has carefully designed this Guide to provide quick, concise answers to daily operational needs; and to serve as a source of reference information.

A small investment of time learning the information provided in this Guide provides maximum benefits and superior results.

IMPORTANT

Please be certain to read all the safety information provided, and contact Kurz Instruments™ immediately if a safety concern arises.

Please refer to the Appendices section for any information pertaining to your unit that was not covered in the main text of this Guide. After reading the information provided in this Guide, if there are any questions left unanswered, please contact Kurz Instruments™ support personnel for additional assistance.

The Kurz Instruments™ toll-free service number is 1-800-424-7356. Other contact information is provided in the chapter titled "Obtaining Assistance".

**Electronic
Version**

If you are using the electronic version of this Guide (via Adobe Acrobat Reader version 3 or higher), you will find that the Table of contents has hyperlinks – just click on them to jump to the desired item. The document is also fully text-searchable using the Acrobat Reader "Find" function. It will also print nicely on your printer.

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1.2 PURPOSE AND SCOPE

This User's Guide provides product information, installation, maintenance, problem solving, and other important information for the K-BAR™ Multi-point Insertion Mass Flow Element.

It is intended for use by technicians and engineers who are fully qualified to work with precision measurement equipment in the environment into which the K-BAR™ will be installed. Because the K-BAR™ can be used in a variety of environments, it is not feasible to cover specifics regarding those conditions in this document.

1.3 WARNINGS AND CAUTIONS

It is not possible to anticipate every condition and situation that the product will be exposed to. The following warnings and cautions represent typical situations that require special attention. Your knowledge and experience with your specific environment must be also taken into consideration in order to help assure safety for personnel and equipment.

WARNING

Be aware of the potential hazards associated with the environment into which the equipment will be installed. Kurz Instruments™ cannot anticipate these for you.

CAUTION

Use only quality tools and materials during installation or maintenance.

To ensure compliance with General Safety requirements, metal enclosures must be grounded to minimize the chance of electrical shock. For explosive atmospheres, proper grounding minimizes the chance of sparks occurring (ignition sources) outside an enclosure at its mechanical interfaces if a fault current was to flow. Both internal and external grounds are available, see the wiring diagrams at the end of this manual.

For hazardous gas areas, wiring going into and out of the explosion proof enclosures must be through a conduit seal or cable gland rated for explosion proof applications (Class 1 Div. 1 or Zone 1) attached directly to the enclosure. These seals are not needed for non-incendive designs (Class 1 Div. 2 or Zone 2).

For hazardous areas it is important to not connect or disconnect any wiring when the circuit is energized, the resulting spark could cause ignition.

14 DISCLAIMERS

Document

Every effort has been made to supply complete and accurate information to the customer. However, Kurz Instruments, Inc. assumes no responsibility for its use, nor any infringements of patents or other third parties which would result. In addition, Kurz Instruments, Inc. makes no representations or warranties of any kind concerning the contents of this publication. Under no circumstances will Kurz Instruments, Inc. be held liable for any loss or other damages pertaining to the use of this publication.

This publication is general in nature. No guarantee is made that this publication conforms to the particular equipment produced for a particular application. "As-built" documentation may incur an additional charge. Factory and on-site training in the use and operation of Kurz Instruments, Inc. products may be made available at the buyer's expense, subject to agreement by Kurz Instruments, Inc..

The information contained in this publication is subject to change without notice. Kurz Instruments, Inc. reserves the right to make changes and product improvements at any time and without prior notice. Consult your local Kurz Instruments, Inc. representative or an applications engineer for information regarding current specifications.

Application and Usage

Kurz Instruments, Inc. assumes no liability for damages or injuries (consequential or otherwise) caused by the improper use and/or improper installation of this product, or where this product is used in any application other than what it was designed for and intended. Kurz Instruments, Inc. expressly denies any responsibility if this product has been modified without Kurz Instruments, Inc.'s prior written approval, or if this product has been subjected to unusual physical or electrical stress, or if the original identification marks have been removed or altered.

Equipment sold by Kurz Instruments, Inc. is not intended for use in connection with any nuclear facility or activity unless specifically sold for such applications and specific conditions for such usage are detailed. If the equipment is used in a nuclear facility or activity without supporting quotation, Kurz Instruments, Inc. disclaims all liability for any damage, injury, or contamination, and the buyer shall indemnify and hold Kurz Instruments, Inc., its officers, agents, employees, successors, assigns, and customers, whether direct or indirect, harmless from and against any and all losses, damages, or expenses of whatever form and nature (including attorneys fees and other costs of defending any action) which they, or any of them, may sustain or incur, whether as a result of breach of contract, warranty, tort (including negligence), strict liability or other theories of law, by reason of such use.

15 COPYRIGHT

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16 TRADEMARKS

Kurz, Kurz Instruments, Inc., K-BAR, Series 155, Flow Perfect, and ADAM™ are trademarks of Kurz Instruments, Inc.. Other trade names are the property of their respective owners, and are hereby acknowledged.

17 CONVENTIONS

This User's Guide uses the following conventions:

WARNING

A **WARNING** indicates that **PERSONAL INJURY** may occur if the user does not observe the provided information.

CAUTION

A **CAUTION** indicates that **DAMAGE TO EQUIPMENT** may occur if the user does not observe the provided information.

PRECAUTION

A **PRECAUTION** indicates that **INCONVENIENCE TO THE USER** (such as loss of, or incorrect data) may result if the user does not observe the provided information.

1.8 RELATED PUBLICATIONS

The following publications available from Kurz Instruments™ may also prove helpful:

TABLE 1-1 DOCUMENTATION LIST		DOCUMENT NUMBER
ADAM™ Series 155 Mass Flow Computer User's Guide		360156
Theory and Application of Kurz Thermal Convection Mass Flow Meters		364003
Suggested Specification Multi-Point Insertion Mass Flow Meters		364016
Power and Combustion Application Guide		364006
Thermal Flow Monitor Design and Performance in Acid Rain Stacks		364007
Tracer Gas Dilution Calibration System		364011
Pressure Drop of Kurz Insertion Mass Flow Elements		364012
Variable Correction Factor ("VCF") In-Situ Calibration Procedure		364013
Pulverizer Air Flow Measurement Aids Combustion Optimization		364015
Effect of Vortex Shedding on the Structural Integrity of Kurz Insertion Mass Flow Elements		364017

1.9 STANDARD WARRANTY

Following are the terms for the standard warranty provided for the K-BAR™. In some cases, the terms of sale will specify alternative warranty coverage - in such cases, those terms supercede the information below.

In the following statement of warranty, "the Company" refers to Kurz Instruments, Inc., and "headquarters" refers to its Monterey, California location.

LIMITED WARRANTY**(Liability for Repair or Replacement Only)**

This product is warranted to be free from defects in material and workmanship for one year from date of shipment. The Company's obligation is limited to repairing, or at their option, replacing products and components which, on verification, prove to be defective, at its headquarters in Monterey, CA..

The Buyer is responsible for construction materials selection and suitability with the intended use of Kurz equipment. The Company shall not be liable for installation or removal charges, for expenses of the Buyer for repairs or replacement, for damages for delay of or loss of use, or other indirect or consequential damages of any kind.

The Company extends this warranty only upon proper use and/or installation of the product in the application for which it was specified, and does not cover products which have been modified without the Company's written approval, or which have been subjected to unusual physical or electrical stress, or upon which the original identification marks have been removed or altered.

Whenever the design of the equipment to be furnished for the system in which it is to be incorporated originates with the Buyer, the warranty is limited specifically to matters relating to the furnishing of equipment free of defects in material and workmanship, and the Company assumes no responsibility for implied warranties of fitness for purpose or use.

Transportation charges for material shipped to the Company at its headquarters for warranty repair are to be paid by the Shipper. The Company will return items repaired or replaced under warranty prepaid. No items shall be returned for warranty repair without prior authorization from the Company.