

**PORTABLE
AIR
VELOCITY
METERS**

SERIES 440/SERIES 490



MODEL 441S

BATT. OK

KURZTM
INSTRUMENTS
INC.

KURZ INSTRUMENTS, INC.



**The technology leader
in portable air velocity
meters.**

For over 17 years Kurz Portable Air Velocity Meters have been used by thousands of customers world wide. Kurz anemometers have earned a reputation for accurate and fast flow measurements in a variety of industrial applications.

**Industries That Use
Kurz Air Velocity Meters**

- ▶ Aerospace
- ▶ Cogeneration
- ▶ Chemical Processing
- ▶ Food Processing
- ▶ Hospitals & Laboratories
- ▶ Manufacturing
- ▶ Metals & Mining & Glass
- ▶ Petro-Chemical
- ▶ Pharmaceutical/Biotechnology
- ▶ Safety & Industrial Hygiene
- ▶ Semiconductor
- ▶ Transportation
- ▶ Utilities—Fossil & Nuclear
- ▶ Wastewater

Typical Applications

- ▶ Environmental Monitoring
- ▶ HVAC Duct Balancing
- ▶ Fume Hood Monitor/Profiling
- ▶ Scrubber Performance Monitoring
- ▶ Extruder Quench Air Monitoring
- ▶ Clean Room Air Monitor/Profiling
- ▶ Leak Detection
- ▶ Cooling Air Flow Monitor

Sensor Technology. Kurz portables utilize a "constant temperature" thermal flow technology principle. An analogy would be the human body. If you stand in the wind and bare your arms, you will feel a chill on your arms. This chill is caused by the temperature of the

wind and by the mass of wind molecules taking heat energy away as the air crosses your skin surface. Your brain controls your body temperature at a constant 98°F. When the air passes over your arms, your skin temperature is reduced by the thermal transfer of your body heat to the air molecules. Your brain tells your body to burn calories to maintain a constant temperature. If your brain included a calorie meter, it could provide an indication of the air flow rate.

Kurz sensors incorporate two temperature sensing elements. One element is passive and is used as a reference for tracking the air stream temperature. The second element is heated by an electrical current to maintain a constant temperature above the air stream temperature. As the air stream molecules take heat energy away from the heated element, more current is required to maintain the temperature differential. The required electrical current is proportional to air mass velocity and is displayed on the Air Velocity Meter enclosure.

Kurz thermal flow technology offers the following advantages over competitive alternatives:

- ▶ Low Pressure Drop
- ▶ Simple Insertion Measurement
- ▶ Extremely Fast Response
- ▶ Wide Flow Rangeability
- ▶ Low Flow Measurement Capability
- ▶ No Corrections Required for Temperature or Pressure
- ▶ Direct Flow Rate Reading
- ▶ No Moving Parts to Wear or Fail
- ▶ Resistance to Dirt Fouling

Probe Shield and Extender



MODEL 4419

KURZ

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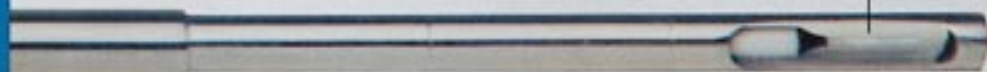
CHARGER

6000 FPM
1250 FPM
300 FPM
100 FPM



The Series 440, tough portables with proven technology.

DuraFlo™ Sensor



- A** Easy to handle with compact case and lightweight probe.
- B** Easy to change settings for wide rangeability.
- C** Measure differential pressure with static pressure adaptor.

The workhorse of our line of anemometers, the Series 440 has proven its utility with thousands of users in hundreds of applications since 1977.

The rugged Series 440 has demonstrated its reliability and sensitivity in air balancing, fan testing and circuit board cooling; and for air flow and ventilation profiling in offices, factories, hospitals, clean rooms, restaurants—the Series 440 finds applications everywhere. By owning a Series 440 you can join the thousands of satisfied users who'll be using their Series 440's well into the next century.

Kurz sensor technology.

The Series 440 uses the rugged Dura-Flo™ sensor originally developed by Dr. Kurz. The two sensor elements are constructed of reference grade platinum wire wound over a ceramic mandrel, coated with a thin layer of glass and mounted in the sensor supported with high temperature epoxy. This construction provides a highly repeatable, rugged and dirt resistant thermal mass velocity sensor.

Rugged enclosure. With a tough, strong, Cylolac™ ABS enclosure, the Series 440 readily stands up to the knocks of field use. Equally at home in the boiler room, on the factory floor, or up on the catwalk, the Series 440 has an internal one amp/hour rechargeable NiCad battery. These provide continuous power for a full days operation in the field, but in practice usually last for several weeks of occasional measurements.

Wide rangeability. All models in the 440 Series have multiple ranges. This broad selection of air velocity ranges offers unmatched accuracy for velocities to 12,000 standard-feet-per-minute (SFPM), but without losing the ability to measure low flows down to 10 SFPM with the added bonus of optional temperature and static pressure measurement ranges.

Measure differential pressure too! Selected models of the Series 440 include a static pressure adaptor that fits over the end of the air velocity probe. The adaptor has opposing ports and identical nozzles just inside those ports. Alignment scribe lines on the probe provide for correctly positioning the adaptor. By pressing one of the rubber gasketed ports against a 1/4" hole drilled in duct or pipe, the Series 440 can measure up to 5" water column differential pressure. This additional feature makes the Series 440 especially attractive to users with HVAC and air balancing applications.

When you need an air velocity meter everyone can use, choose the Series 440. Its utility, simple operation and many practical features make it a pleasure to own.



**MINI
ANEMOMETER
SERIES 490-IS**

KURZ
INSTRUMENTS INC.

HIGH RANGE

LOW RANGE

MODEL 491

FPM x 1000

FPM x 100

Ref. 25°C

760 mm/s



APPROVED

- FOR CL. I, GR. A, B, C & D, HAZ. LOC.
- TEMPERATURE RATING: T3C
- SYSTEM APPROVED FOR THE FOLLOWING AA, 1.5 V. ALKALINE BATTERIES:
EVEREADY #E91
DURACELL #MN1500
PANASONIC #AM3

*Epoxy-Glass
Sensor Support*

*Low Power,
intrinsically safe
sensor*

**490-IS... the most
convenient and compact
air velocity meter.**



Retractile Cable—
expands to 6'



- A** A carrying case is included with every Model 490-IS.
- B** The non-conductive probe is ideal for use around electronics (cooling airflow).
- C** The 490-IS is very simple to use. Simply turn it on and hold the probe in the flow.
- D** All models have dual ranges and battery test feature.

Our 490-IS Mini-Anemometer

incorporates Kurz sensor expertise into an inexpensive air velocity meter you can take with you anywhere. Throughout industry, Kurz air velocity instruments are known for their ruggedness, repeatability, meticulous construction and painstaking calibration. The 490-IS is an example of these qualities at their best. Considering its low cost, the 490-IS is a great value.

Intrinsically safe! Only Kurz offers a compact, intrinsically safe thermal anemometer. The 490-IS is ideal for flow measurements needed to meet EPA and state OSHA emission regulations for a wide variety of vapor emission sources.

Outstanding sensitivity. Because the thermal sensor responds to the cooling effect of even a few molecules as they move past the sensor, you can take accurate low air, even still air, measurements long before other types of air velocity meters even begin to indicate a reading! It's perfect for building surveys to identify stale, static air. Simply holding a 490-IS in your hand and blowing on the sensor will convince you of its great sensitivity. This compelling feature alone makes the 490-IS the obvious choice for many of today's applications such as electronic cooling, HVAC air balancing, clean room HEPA filter checking and ventilation surveys.

No moving parts. The Kurz 490-IS has a design concept unmatched by any other type of anemometer. Sensitivity, accuracy and response are excellent over the entire flow range. Anemometers using Pitot-Static tubes, vanes, cups, turbines, propellers do not measure mass flow directly and perform poorly at velocities below 1,000 feet-per-minute. When it comes to low velocities, Kurz thermal sensors perform, while others fall away long before. There are no tubes to plug, no bearings to wear, no propellers to wobble—that's the magic of the 490-IS!

NIST traceable calibration included. National Institute of Standards Technology traceable calibration is standard. You can depend on the Kurz 490-IS to deliver accurate measurements with flawless repeatability, time after time.

Dual ranges for 100:1 rangeability. We made certain all models of the 490-IS Series encompass your needs by building all models with dual ranges. Though you may have a pretty good idea what velocities you'll measure routinely, the wide rangeability nevertheless is a great advantage for the occasional special-case measurement.

SPECIFICATIONS

ENGLISH UNITS: MODELS AND DISPLAY RANGES														
MODEL	VELOCITY STANDARD FEET PER MINUTE (SFPM)											TEMPERATURE °F		STATIC PRESSURE INCHES WATER
	160	200	300	600	1,000	1,250	2,000	2,500	6,000	10,000	12,000	0-250	0-500	0-5
441S														
441S-HT														
443														
443-HT														
444														
444-HT														
490-IS														
491-IS														
493-IS														

INTERNATIONAL UNITS: MODELS AND DISPLAY RANGES													
MODEL	VELOCITY STANDARD METERS PER SECOND (SMPS)										TEMPERATURE °C		STATIC PRESSURE mm WATER
	1	1.5	3	5	6	10	30	50	60	0-125	0-200	0-120	
441M													
441M-HT													
443M													
443M-HT													
444M													
444M-HT													
490-IS-M													
491-IS-M													
493-IS-M													

PRODUCT DESCRIPTION	SERIES 440	SERIES 490-IS
POWER	1 amp-hr nicad battery	4 AA alkaline batteries
RECHARGER	115/220 VAC, 50/60 Hz	—
ELECTRONIC ENCLOSURE SIZE	7.25"Hx5.19"Wx2.50"D	4.88"Hx2.36"Wx1.38"D
CARRYING CASE SIZE	12.50"Hx17"Wx3.38"D	6.75"Hx8"Wx3.13"D
SHIPPING WEIGHT	8 lbs.	3 lbs.
REPEATABILITY	0.25% F.S.	0.50% F.S.
SENSOR TYPE	DuraFlo™	Low-Power
SENSOR WETTED MATERIALS	Glass, Epoxy, Stainless Steel	Glass, Epoxy, Stainless Steel
SENSOR SUPPORT MATERIAL	316 Stainless Steel	Epoxy-Fiberglass
SENSOR SUPPORT LENGTH	13' Standard 6', 24', 36" is available	6'
PROBE CABLE LENGTH	8 feet	6'-72" (retractile)
ENCLOSURE TEMP. RANGE	-15°C to +55°C	
ENCLOSURE HUMIDITY RANGE	0-95% non-condensing	
WARRANTY	1 year (see Kurz warranty for details)	



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DCN 367029 REV. C

PRODUCT SERIES	ACCURACY SPECIFICATION*
440, 440-HT	±[(3% + 0.02%/°F) reading + (15 SFPM + 0.45 SFPM/°F)]
440M, 440M-HT	±[(3% + 0.036%/°C) reading + (0.075 SMPS + 0.0036 SMPS/°C)]
490-IS	±[(5% + 0.03%/°F) reading + (20 SFPM + 0.6 SFPM/°F)]
490-IS-M	±[(5% + 0.0054%/°C) reading + (0.10 SMPS + 0.0054 SMPS/°C)]

*The temperature effect is referenced to 25°C (77°F)

PRODUCT SERIES	SENSOR PROCESS TEMPERATURE RATING
440	-40°C to + 125°C
440-HT	-40°C to + 200°C
490	-15°C to + 70°C

IMPORTANT NOTICE: Specifications are subject to change without notice. Kurz Instruments reserves the right to make engineering changes and product improvements at any time and without prior notice.