

4 1/2 Inch Rectangular Type K-221 For Commercial Service

Application

Type K-221 instruments are the lowest priced of the Weschler switchboard instruments, yet they meet the same rigid performance specifications as the more expensive types. These instruments are recommended for use where they can be read from a distance of less than twelve feet. The Type K-221 is used most effectively on industrial apparatus such as mill drives, generator sets, power rectifiers and converters. It is most practical for electric utility uses such as in substations where readings are taken only occasionally, but where the ultimate in reliability is required.

This is the lowest priced instrument which should ever be used where the failure of an instrument circuit could affect an associated critical circuit. This is usually the case where current and potential transformers or transducers are shared with devices having control or protective functions.

Standards

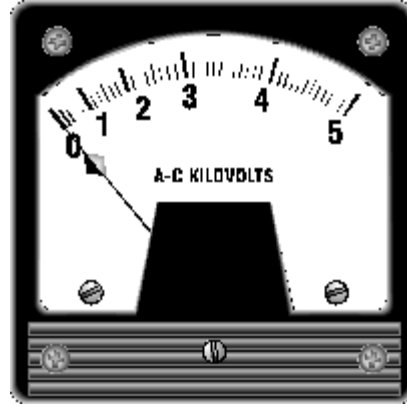
Type K-221 instruments comply with USA Standards C39.1, 1964, for 1% class switchboard instruments. In such areas as related to shock, vibration, friction, repeatability and electrical losses most K-221 types will exceed these specifications because of improvements inherent in the taut-band design.

Features

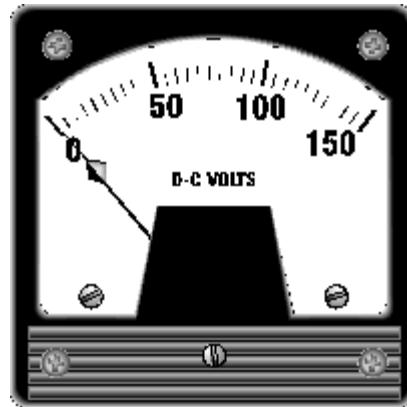
Taut-Band Suspension

All K-221 instruments except wattmeters and power factor meters use taut-band suspension. Instruments incorporating this feature are identified by the trademark **tbs**. The taut-band suspension instrument has certain unique advantages over the conventional pivot and jewel type:

1. It eliminates friction, giving better accuracy and almost perfect repeatability.
2. It gives top performance under adverse conditions of shock and vibration.
3. It permits mounting on apparatus without fear of damage in shipment.
4. It reduces maintenance, thereby saving money throughout the lifetime of the instrument.
5. It assures longer life, reducing annual depreciation and replacement costs.
6. It has greater sensitivity, reducing power burdens on circuits being measured.



KA-221 Ac Voltmeter



KX-221 Dc Voltmeter

Mechanisms

The K-221 instrument uses a core-magnet permanent magnet moving-coil mechanism for dc measurement. For direct measurement of ac current or voltage a repulsion type moving-iron mechanism is used. Both of the above have taut-band suspensions. Power factor meters and wattmeters are of the dynamometer type with pivot and jewel bearings, but may be furnished as taut-band instruments using external transducers-

High Overload Capacity while the exact overload capacities vary with ratings, the K-221 instruments, generally, will withstand momentary overloads in excess of industry standards without sustaining damage. For ac instruments this overload capacity is in excess of 35 times normal current, and for dc it is in excess of 150 times. Therefore, it is permissible

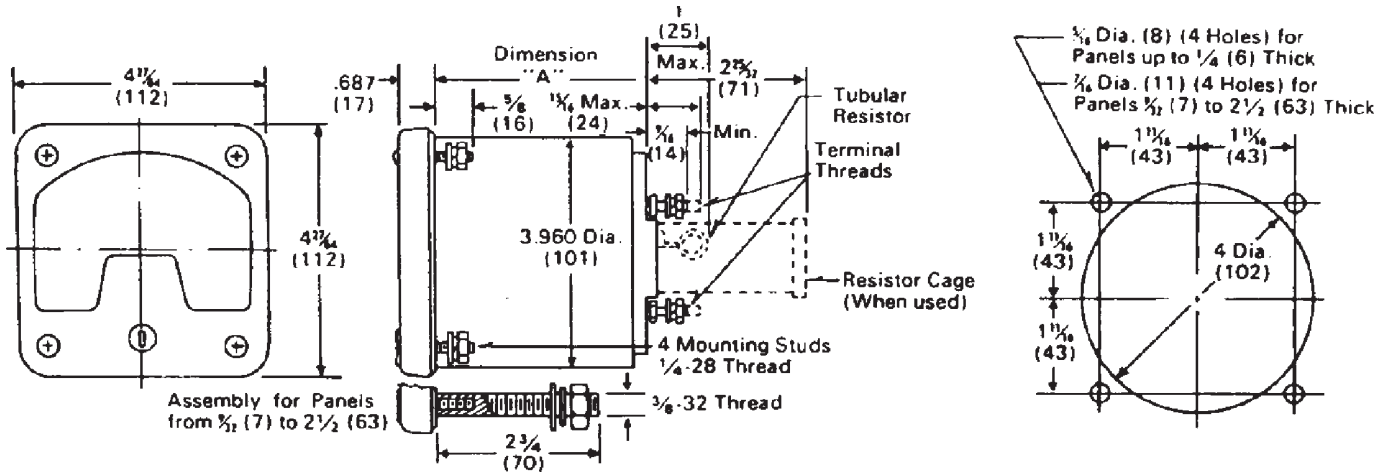
to select instruments to read at a preferred three-quarters scale at normal current and yet permit pegging, the instrument during high-current transient conditions.

Magnetic Shielding

The dc core-magnet instruments can be used in external fields up to 500 gauss. They can be mounted close to conductors carrying thousands of amperes without the necessity of installing magnetic shields.

4½-Inch Rectangular Type K-221, For Commercial Service

Outline Dimensions and Drilling Plan In Inches (Millimeters), For detailed dimensions, see Application Data 43-200,



Specifications

Accuracy: 1% of full scale deflection.

Case Size: 4½-inch class (4^{27/64}-inch square).

Insulation Rating: 800 volts.

Shielding: Magnetically shielded.

Scale Length: 4 inches for 100 degrees rotation.

Net Weight: 3 to 5 pounds, exclusive of accessories.

Burdens: 5A ac Ammeter - .44 va
AC Wattmeter
Current coil (5A) - 1.95 va
Potential coil - 3.6 va
150v ac voltmeter - 1.92 va
1ma dc - 12 ohms

For further details on burdens, see Application Data 43-200.

Modifications

Dials: Black with white marking
Fluorescent
Multi-scale
Fine line
Special colors, trademarks & legends.

Windows: Non-glare

Electrical: Intermediate rating
Special calibration
Offset or suppressed zero

Multiple rating

Special sensitivity
Accuracy to 1/2%

Mechanical: Pusher, index pointers or Knife-edge pointer.

Many additional modifications are available on special negotiation.

Types Available

Function	Ranges	Type	Mechanism Type
DC Microammeter	50ua to 1 ma	KX-221	permanent magnet moving coil
DC Milliammeter	1 ma to 1 A	KX-221	permanent magnet moving coil
DC Ammeter	1 A to 50 A	KX-221	permanent magnet moving coil
DC Millivoltmeter	50 mv to 1 V	KX-221	permanent magnet moving coil
DC Voltmeter	1 V to 750 V	KX-221	permanent magnet moving coil
Ac Milliammeter	10 ma to 1 A	KA-221	repulsion iron-vane
Ac Ammeter	1 A to 50 A	KA-221	repulsion iron-vane
Ac Voltmeter	15 V to 750 V	KA-221	repulsion iron-vane
Frequency Meter	50, 60, 400 Hz	KR3-241	self-contained transducer
Ac Wattmeter	.5 A to 10 A	KY-221	dynamometer
Ac Varmeter	5 A to 10 A	KY-221	dynamometer
Power Factor Meter	0.5 to 1 to 0.5	KJ-221	self-contained transducer
Resistance Thermometer	100 to 200°F	KX-221	self-contained transducer

Wiring Diagrams

See Application Data 43-200.
Instructions: IL 43-221

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