INTERNATIONAL INSTRUMENTS

V. Electronic Controllers and Indicators.

All-electronic indicating, alarm/control and annunciating instruments designed for superior visibility, accuracy and ease of installation.

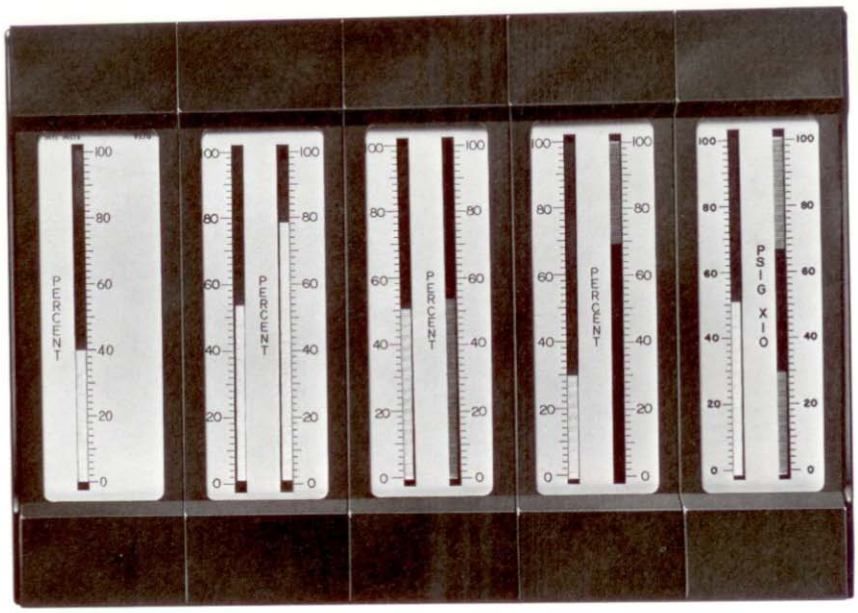
we deliver. analog. edgewise. rounds. squares. and more. on time.

INTERNATIONAL INSTRUMENTS

Lumigraph™

INDICATING, ALARM/CONTROL, ANNUNCIATING METERS

- ☐ Display and Alarm circuitry independent of one another.
- ☐ Plug-in replaceability.
- ☐ Low power drain, noise immunity, cool running owing to C-MOS circuitry.
- ☐ High resolution, high accuracy.
- ☐ High ±0.5% resolution, accuracy of over ±1.0%. High reliability.
- ☐ Optically-isolated inputs.
- ☐ Simplified, one-man installation with easy-locking swing-up catches.
- ☐ Front replaceable display and scales.
- ☐ Retransmission available.



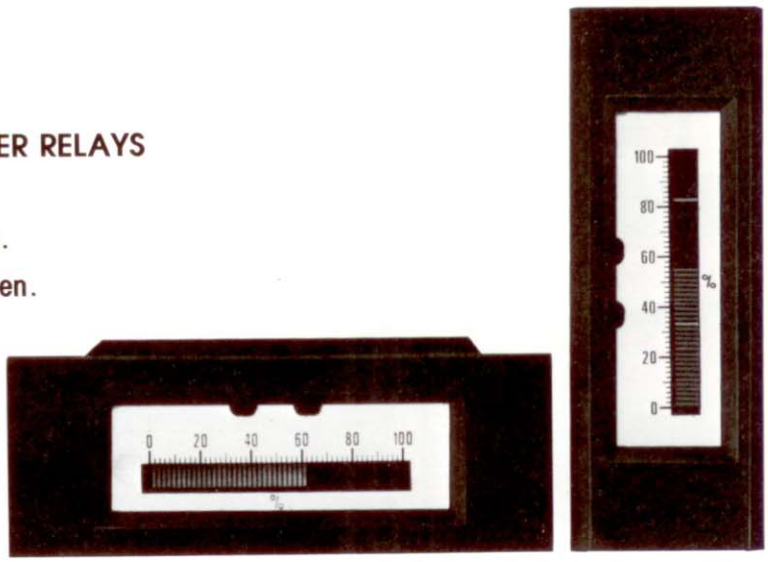
This 6-inch line-powered all-electronic instrument has a gas-discharge display comprising 203 closely spaced elements, each 0.150 inches wide. Measured variables appear as neon orange bars, alarm setpoints as bright red bars (flashing optional). Self-contained unit requires only signal and power input (120 VAC, 50/60Hz) for operation.

Retransmission option, not always available with competitive meters, permits user to get back a signal in engineering units proportional to the input signal. (e.g. If input is 0 to 1 mil, the user can display 0-1 mil in units of his choice, 4-20mA or whatever.)

Verigraph™

INDICATOR/CONTROLLER METERS AND METER RELAYS

- ☐ Brighter, more colorful vacuum fluorescent displays.
- ☐ Choice of colors — blue-green, yellow, blue or green.
- ☐ Up to 40% less costly than comparable D'Arsonval units.
- ☐ Available in two sizes — to serve as easy replacement for existing 3½-inch or 6-inch edgewise units.



Verigraph is an electronic bargraph with annunciating and control capability. It is designed in two sizes – to serve as easy replacement for either existing 3½-inch or 6-inch edgewise units. The vacuum fluorescent display — either 51 or 100 segments — is the brightest bargraph display available today. Standard colors are blue-green, yellow, blue or green.

Verigraph panel meters. These indicator-only models are designed for high visibility display of signal intensity. (Bargraph and moving-pointer versions are also available.) Most standard process signals can be displayed. Optional front-adjusted "memory bars," with twice the brightness of the other segments of the graph can be set to mark desired signal strength.

Illuminated Alarm/Control Set Points.

For alarm or on/off control use, the right side bar can be driven by one or two potentiometers. For high alarm, bar is driven from the top down, for low alarm bottom up. Alarms are red, while input signals are neon orange.

Self-Annunciation.

On models with set point controls, an alarm causes high or low portion of the red set-point control bar to flash. Underrange or overrange conditions will cause entire orange indicator bar to flash.

Fail-Safe Performance.

Loss of power creates an alarm. (Control relays on units so equipped are de-energized when an alarm condition exists).

Retransmission (Optional).

Standard output signals are the five most commonly used:

Signal		Load Resistance
4-20 mAdc	into	750 ohms max.
0-1 mAdc	into	15,000 ohms max.
0-10 Vdc	into	5,000 ohms min.
10-0-10 Vdc	into	10,000 ohms min.
1-4 mAdc	into	3,000 ohms max.

Note: Virtually any retransmission specs are available on special order.

HOW TO ORDER A LUMIGRAPH

Establish Order No., as shown below, or call Order Dept., (203) 481-5721, and describe your requirements.

Model No.	H or V	Zero Position (consult factory for "zero center")
From Table A2	Hor. or Vertical	Hor. : L or R (left, right) Vert.: T or B (top, bottom)

9270S-10 - H - L

Specify additionally for each Order No.:

Specify input as follows:

Thermocouple (8mV span min.)	Voltage or Current
RTD (other than 10 ohm copper)	Thermistor
RTD: 10 ohm copper	Other: specify

Input range and scale range: Specify input range, scale range, sensor type and, in the case of RTDs, resistance at 0°C and/or RTD curve to be used.

OPTIONS AND SPECIAL ORDERS: Almost *any* deviation from the standard specifications detailed in this bulletin — as well as almost *any* new and challenging concept that falls within our product area — *is available as an option or special order.*

WHATEVER YOUR UNUSUAL REQUIREMENTS, call our Customer Service Dept., (203) 481-5721.

Verigraph meter relays. These bright modern instruments — with high and low alarm setpoints, and a 1-amp alarm output — cost up to 40% less than competitive d'Arsonval units.

Verigraph provides visual annunciation on high and low alarm conditions (the setpoint bars flash) as well as separate, though distinct, annunciations for crossed alarms, and over- or under-ranges (entire bargraph flashes).

A complete package. Unlike conventional displays, Verigraph meters and meter relays are complete, solid-state instruments. Each microprocessor-controlled device houses an internal power supply, signal-conditioning circuits, and, where applicable, 1-amp output relays. Operating on 5 Vdc at 300 mA (max), Verigraph is ready for assembly into your product, or for mounting in your control panel.

Easy Installation. No wiring problems. Edgecard connectors (10-position) are standard, barrier strips optional.

Easy scale replacement/setpoint selection. Simply snap the front cover off its specially-designed mounting clips, remove two screws and crystal and lift out the scale. Setpoints, both high and low, are easily front-

HOW TO ORDER A VERIGRAPH

Establish Order No., as shown below, or call Order Dept., (203) 481-5721, and describe your requirements.

Model No.	H or V	Zero Position
From Table A1	Hor. or Vertical	Hor. : L or C (left, center) Vert.: B or C (bottom, center)

9285-01 - V - B

Specify additionally for each Order No.:

Type of termination: (1) edgecard, (2) edgecard with mating connector, or (3) terminal strip.

Display color: (1) Blue-green, (2) blue, (3) green, (4) yellow.

Display format: (1) bargraph, (2) moving pointer (single bar).

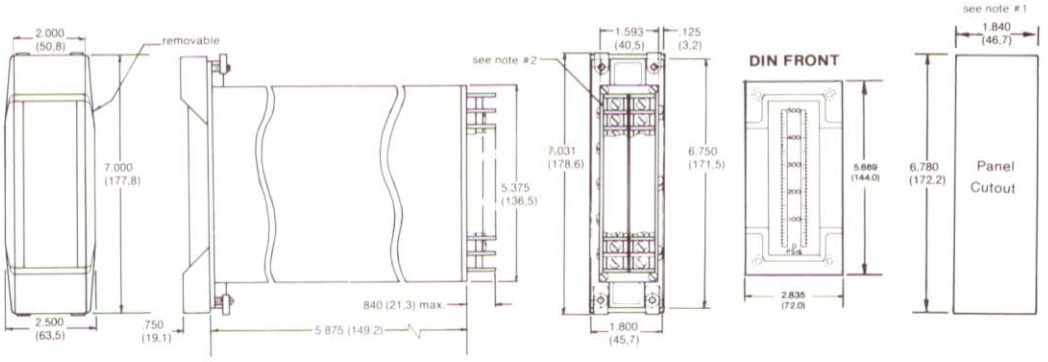
Input range and scale range: List according to the requirements of your own application.

MECHANICAL DATA

LUMIGRAPH Model 9270S

All dimensions — inches (mm)

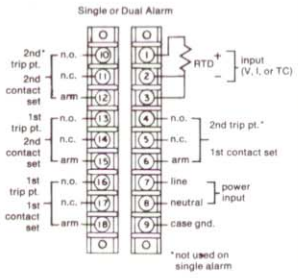
All dimensions nominal and subject to change without notice. Please request latest mechanical data from factory before preparing buying specifications or critical engineering drawings. (See back cover.)

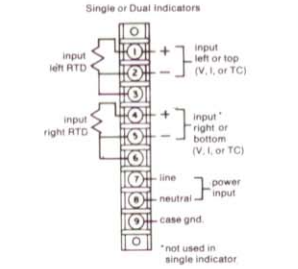


NOTES

1. Add 2.000 for each additional instrument.
2. Omit indicated terminal block for single and dual indicator instruments only.

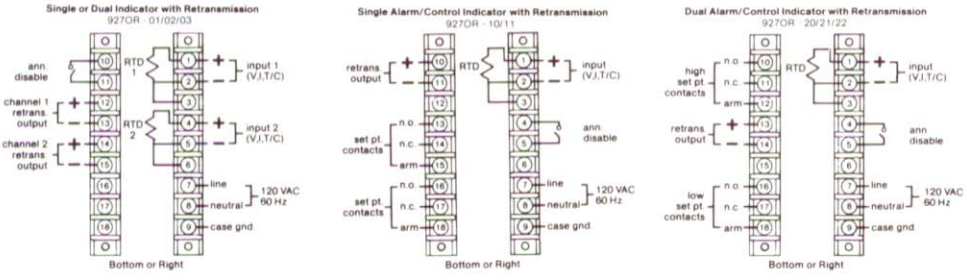
EXTERNAL WIRING DIAGRAMS





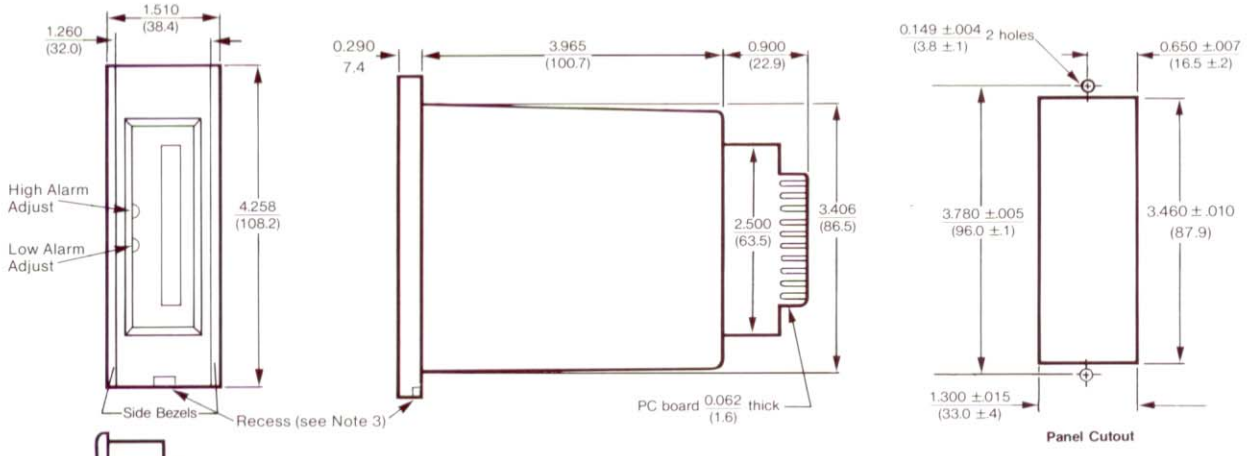
RETRANSMISSION (Specify Model 9270SR)

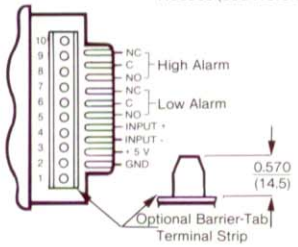
EXTERNAL WIRING DIAGRAMS



VERIGRAPH Model 9285

For dimensions and mechanical drawings on 6-inch Verigraph, consult factory.





Notes:

1. Side bezels are removeable for side-by-side mounting.
2. Suggested mating connector - Dale, Series EB 7S, 10 contacts, or equivalent.
3. To adjust alarms, remove front cover by inserting screwdriver blade in recess at top or bottom of front cover and pry cover off. Bend clear plastic, protective cover forward and adjust potentiometers.

SPECIFICATIONS: VERIGRAPH / LUMIGRAPH

	VERIGRAPH – Model 9285	LUMIGRAPH – Models 9270 and 9270S
SPECIFICATIONS AT ROOM TEMPERATURE AND RATED VOLTAGE		
Scale length-inches (mm)	1.97 (50.0)	4.0 (101.6)
Accuracy (% of span)	2%	1%
Resolution (% of span)	2%	0.5%
Response time	0.5 sec. max.	0.5 seconds nominal full scale response of indicator. Adjustable to 3.0 secs.
Input Impedance	Current input 300mV maximum drop. Voltage input 25,000 ohms per volt minimum below 1V. 100,000 ohms per volt minimum at 1V or greater.	Current input DC and AC 300 mV maximum drop. Voltage input 25,000 ohms per volt minimum below 40V. 1 Megohm for 40V and greater. Thermocouple Input – 100,000 ohms min. for 10mV input.
Minimum Spans	DC voltage – 50 mV DC current – 25μA	DC Voltage – 8mV AC Voltage – 100mV DC Current – 25μA AC Current – 25μA at 500 ohms Thermocouple – 8 mV RTD or thermistor – 3 ohms change at 5 mA
Maximum Self-Contained Spans	Current – 499 MADC Voltage – 100 VDC	Current 500 MADC 5 AAC Voltage 300 VDC 150 VAC
Input Power	5 VDC, 300 mA max.	Standard 120 V ± 10% 50/60 Hz 14 VA max. Optional 220 V± 10% 50/60 Hz 14 VA max.
Weight	8 oz. (227 GMS)	4 pounds (1.8 Kg)
Connections	Standard-Edgecard Connector (Optional-Barrier Strip)	Standard-Barrier Strip (Optional-Multipin Connector)
Line Voltage Effect	← 0.05% per 1% of line change →	
Temperature Coefficient	← 0.03% per °C →	
Operating Temperature	← 0° to 50°C →	
Storage Temperature	← −20°C to 70°C →	
Seismic	← Designed to meet seismic requirements of nuclear power industry. →	
Power "ON" indicator	← First bar always lighted →	
Set Point Marker	← Double-brightness bar →	
ALARM OR CONTROL OPTIONS		
Accuracy	± 2% of span	±½% of span ± one segment
Dead Band	2% of span	1% of span
Output Contacts	SPDT 1A at 120 VDC resistive load.	Model 9270 : DPDT 5A at 120 VAC or 28 VDC resistive load. Model 9270S: DPDT 1A at 120 VAC or 2A 28 VDC resistive load.

NOTE: Specifications not listed above (e.g.: shock, vibration, temperature) are typically in accordance with ANSI C39.1.

Table A1: VERIGRAPH MODELS

Model No.	Size and weight	Description
9285-01	3½ inch / 8 oz.	Indicator only.
9285-02	3½ inch / 8 oz.	Indicator, dual memory bars.
9285-03	3½ inch / 8 oz.	Indicator, dual alarm (meter relay).
9280-01	6 inch / 16 oz.	Indicator only.
9280-02	6 inch / 16 oz.	Indicator, dual memory bars.
9280-03	6 inch / 16 oz.	Indicator, dual alarm (meter relay).

FOR CALIBRATION OF ⁞⁞ METERS

We recommend the General Resistance RTD-100, the most reliable and accurate instrument available for this purpose as well as for the testing and analysis of RTD temperature measuring systems.

Table A2: LUMIGRAPH MODELS

Model No.	Size and weight	Description
9270S-01	6 inch / 4 lbs.	Single indicators. No setpoints.
9270S-02	6 inch / 4 lbs.	Dual indicators. No setpoints.
9270S-03	6 inch / 4 lbs.	Dual indicator. Optically isolated inputs
9270S-10	6 inch / 4 lbs.	Single indicator. Single alarm (high).
9270S-11	6 inch / 4 lbs.	Single indicator. Single alarm (low).
9270S-20	6 inch / 4 lbs.	Single indicator. Dual alarm (high/low).
9270S-21	6 inch / 4 lbs.	Single indicator. Dual alarm (high/high).
9270S-22	6 inch / 4 lbs.	Single indicator. Dual alarm (low/low).

RETRANSMISSION MODELS: All models are available with retransmission on special order. (Retransmission is the capability of getting back out of the meter a signal that is proportional to the input in desired engineering units.)

SEISMICALLY QUALIFIED MODELS: All models are available at premium pricing. Consult factory. Order by Model No. 9270 (eliminating suffix "S").

Custom Meters and Meter Movements from the specialists in High-Performance Edgewise Technology

International Instruments mounts and calibrates meters in customer supplied bases, or mounts and ships movements in plastic containers for installation by the customer.

Exclusive cantilevered coil construction produces torque to weight ratios on the order of four times greater than conventional edgewise movements of similar size.

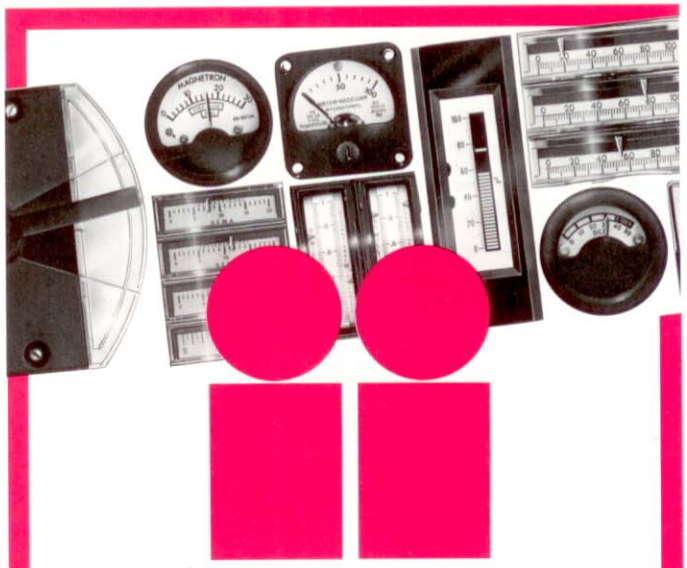
Single, through-pivot shaft, used instead of stub shafts attached to two sides of the coil, eliminates pivot

misalignment and helps maintain linearity and repeatability. Effective coil positioning permits longer pointer arms, special pointer shapes and even meter relay flags.

Dual and triple meter movements. Two or three movements can be mounted on a single base. Applications often require that two or three related signals be compared at a single control station, sometimes with the additional requirement that two of the units be tracked in unison. Difficult . . . but easily handled by ⁘ movements.

Long pointer movements. Permit shorter reading arcs. Previously discussed cantilevered coil construction allows flatter edgewise presentation and reduces reading errors near scale extremities.

Custom control alarm systems. International Instruments is recognized as a leader in control and alarm instrumentation. Many of the control packages designed around customers' specialized requirements include solid-state devices, with or without meters.



Who we are . . .

International Instruments, the world's leading manufacturer of edgewise panel meters, was founded in 1947 with the purpose of developing a series of analog instruments that realized the full potential of the flat, stackable, compact edgewise style of meter.

Today we offer a complete edgewise family of panel meters, alarm/control devices and electronic display instruments, supplemented by a special line of ruggedized miniature meters and the innovative Flat-Pak® line of "space-saver" meters.

⁘ has been a member of the Prime Technology group of companies since 1984. Applications assistance is immediately available from the factory or a comprehensive network of distributors, representatives and agents strategically located throughout the world.

For further information . . .

For further detail on products, options or special orders, or for additional mechanical data and engineering drawings, call and ask for Customer Service:

(203) 481-5721

If it is more convenient, you may also contact ⁘ through the following TWX and FAX numbers. You may also write to the address listed beneath our signature.

TWX: 710-452-3092
FAX: 203-481-8937

Product Data Bulletins available from ⁘

Order by Bulletin Number:

- **I** — Edgewise Meters: Standard Models.
- **II** — Edgewise Meters: Single/Dual Models.
- **III** — Edgewise Meters: Mil. Spec. Models.
- **IV** — Edgewise Meters: Alarm/Control Models.
- **V** — Electronic Controllers and Indicators.
- **VI** — Square & Rounds (Ruggedized/Mil.)
- **VII** — Flat-Pak® Meters.
- **VIII** — Full Line (Short Form) Catalog.

INTERNATIONAL INSTRUMENTS
A Prime Technology Company