MODEL 3650
DUAL PEAK-READ INDICATOR

This instrument is designed to simultaneously display both the maximum (most positive excursion) and minimum (most negative excursion) values of a transient waveform. The primary application is to display the peak values of dynamic mechanical strains measured by strain indicators such as the Measurements Group's P-3500 and Model 3800.

A typical example of such usage is the measurement of maximum forces developed in the structure of mechanical presses during each load cycle. In this case, strain gauges are installed at appropriate locations on the press and the Model 3650 utilizes the analog output signal from the strain indicator as its input signal. The Model 3650 is equipped with an extremely versatile system of meter display and reset, which allows easy and accurate monitoring of the variable force occurring with each strike of the press.

While the Model 3650 is primarily intended to operate from the DC analog output signal obtained from suitable strain gauge indicators or conditioners, it may also be used to capture and display dynamic voltage signals obtained from other sources, so long as these signals lie within its operating range (typically, instruments that provide an analog output in the 1.0 to 11.0-volt range).

The Model 3650 features dual LCD digital displays with a full-scale range of ±19,999 counts. Color-coded push-button controls are easy to use and allow the operator to determine the operating mode at a glance.

The instrument is powered from an internal battery pack consisting of six alkaline "C" cells, which are readily available anywhere in the world when replacement is required. Battery life is approximately 250 hours of continuous use. An external line-voltage adapter is also available (115 or 230Vac, 50 to 60 Hz).

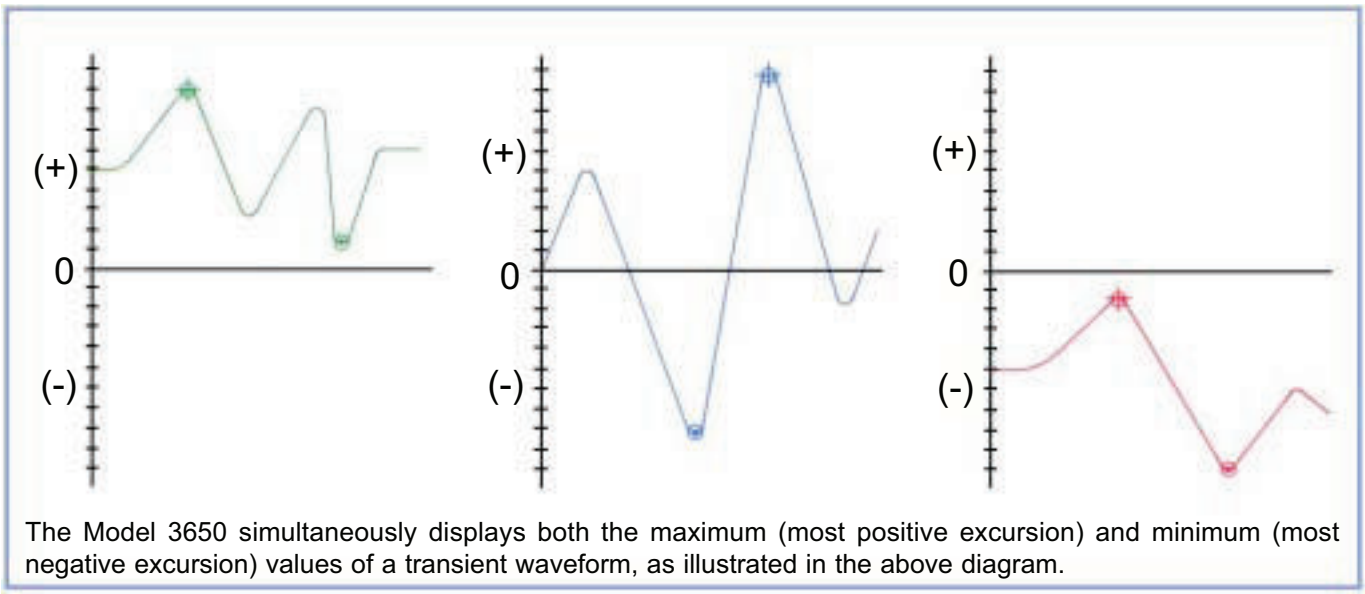
As a dynamic analog signal is fed into the Model 3650, an instantaneous comparison is made to the previously stored values. When the stored values are exceeded, they are immediately replaced with updated values and displayed. The new values are retained until they are exceeded or reset occurs.

Reset is accomplished either manually with a push-button switch, automatically by a selectable timing circuit, or externally by contact closure or TTL low-logic level. Reset simply changes the stored values to the values of the input signal.

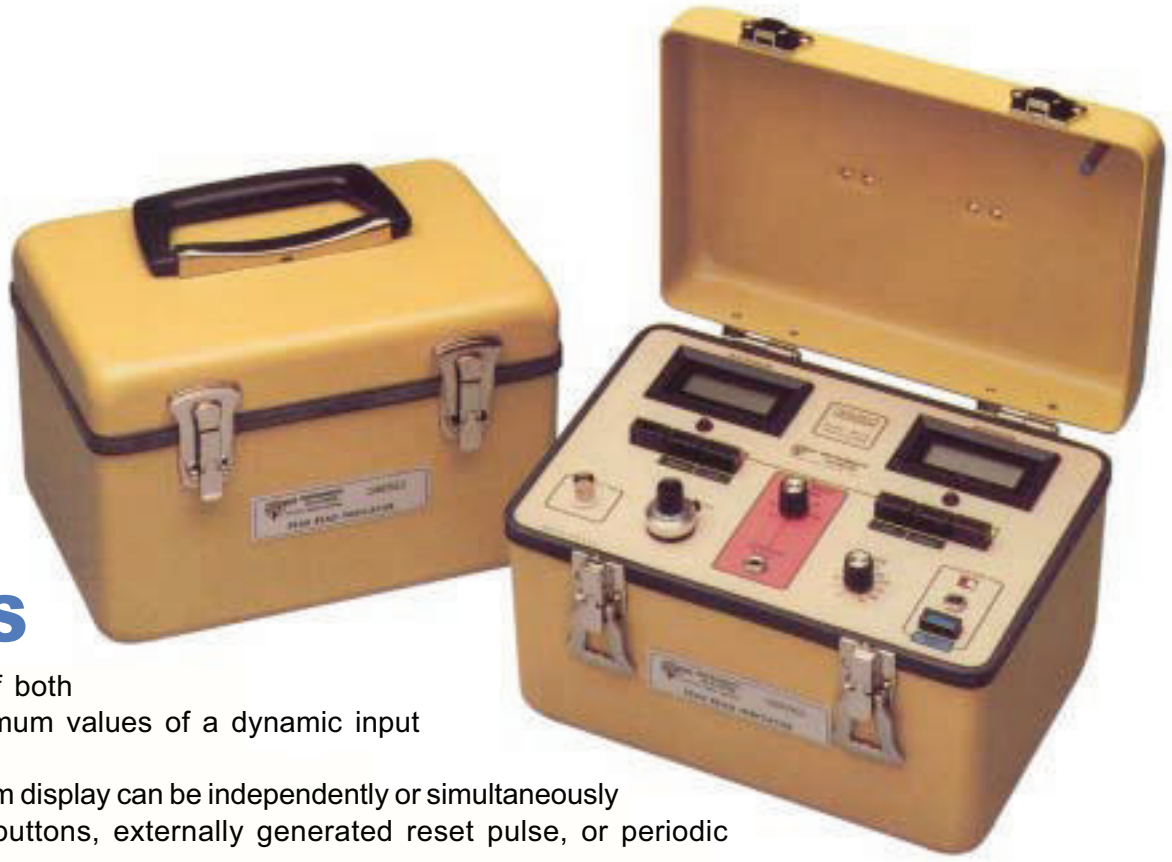
For suppression of voltage transients (noise), often encountered during strain gauge measurements in shop environments, a four-pole Bessel low-pass filter with switchable cutoff frequencies from 2 to 4,000 Hz is built into the instrument.

To measure the amplitude of dynamic voltages, the use of peak-capturing meters, such as the 3650, often requires special precautions to ensure that the input signal is sufficiently "clean" (free of noise) and that the signal duration is sufficient to permit proper measurement accuracy. While the Model 3650 demonstrates repetitive accuracies approaching 0.1% during calibration on ideal waveforms, such accuracies should not be expected in practical dynamic strain measurement. Because of parasitic strains from loose or badly fitting parts of a moving structure, excessive electrical noise, etc., practical repetitive peak measurement accuracies may range from 0.5% to 5%, or even 10%, of the transient maximum strain value.

It should also be noted that the "response time" of this instrument, which determines the minimum duration of the pulse that can be measured with suitable accuracy, has been designed for typical dynamic mechanical phenomena. The Model 3650 is therefore not generally intended for high-speed electrical waveforms that are of interest in various electronic circuit developments.



The Model 3650 simultaneously displays both the maximum (most positive excursion) and minimum (most negative excursion) values of a transient waveform, as illustrated in the above diagram.



FEATURES

- Simultaneous display of both the maximum and minimum values of a dynamic input signal.
- Maximum and/or minimum display can be independently or simultaneously reset by manual push buttons, externally generated reset pulse, or periodic automatic internal reset.
- Selectable four-pole Bessel low-pass filter to discriminate against undesirable high-frequency interference.
- Color-coded push-button controls for simple operation and minimum operator training.
- Compatibility with most instruments that provide an analog output signal.

SPECIFICATIONS

Range and Display:
Dual direct-reading liquid crystal display. ±19,999 counts full scale.
Overload Indication: All-zero display with 2 flashing columnar indicators.

Sensitivity:
±1.0 to ±11V nominal for full-scale indication (±19,999 counts).

Resolution:
1 count, 50 to 550 μV.

Accuracy:
Step Input: ±0.1% ±4 counts for step input of >4 milliseconds duration.
Repetitive Step Input: ±0.2% ±4 counts for repetitive step inputs of > 200 μsec duration. Number of steps required
> 4 milliseconds
Pulse Duration

Input Circuit:
Isolated; input impedance >20,000Ω; either side may be connected to system ground.

Hold Stability:
4 counts/minute maximum, averaged over 5-minute period.

Reset Capability:
Independent or simultaneous reset of maximum and/or minimum by manual push buttons; automatic timed reset; or external contact closure or low TTL level.

Size and Weight:
6 H x 9 W x 6 D in *(152 x 228 x 152 mm)*.
5.5 lb *(2.5 kg)*.

All specifications nominal or typical at +23°C unless noted.