

# IEICOS



## LOADING FRAMES AND ELECTRONIC DIGITAL MICROPROCESSOR BASED DATA LOGGERS WITH RECORDING & PRINTING FACILITY

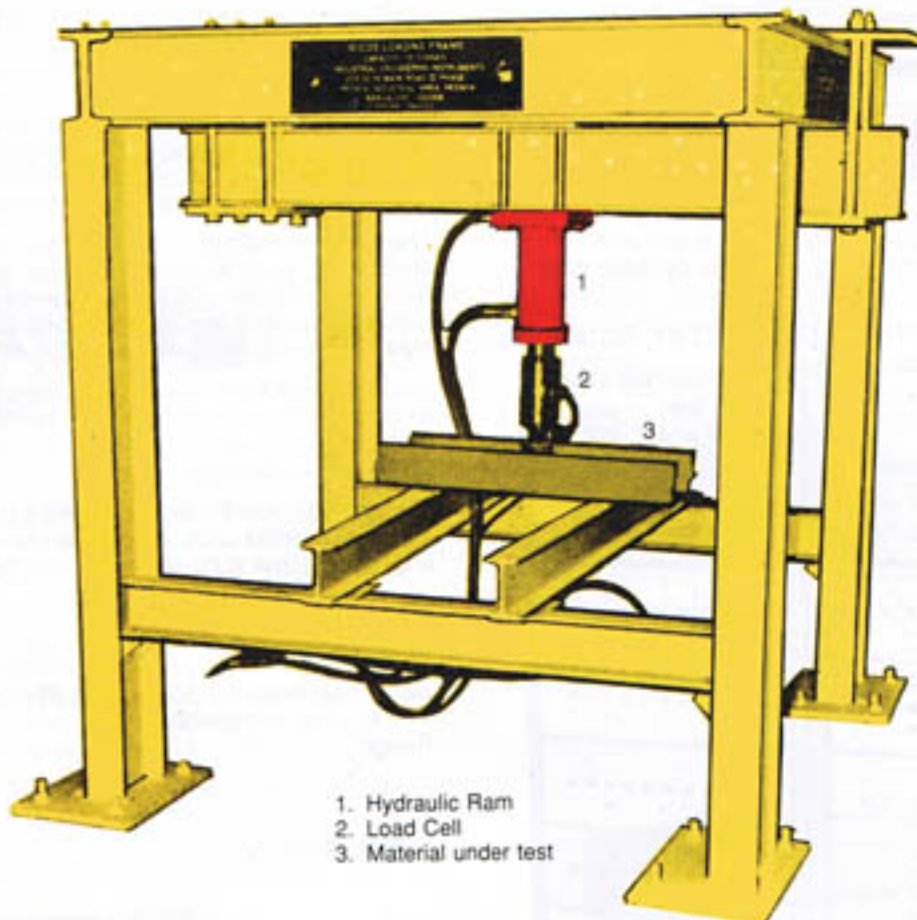
### LOADING FRAME

Loading Frame is a test rig useful for testing of structural elements. This self straining Loading Frame has been designed to cover a wide range of experiments on various structural elements like beams, columns, slabs, portal frames and other structures which can be accommodated and tested within the space and rated capacity of the Loading Frame.

Range: 10, 20, 50 and 100 tonnes.

The Frame is fabricated from standard rolled sections for assured strength. The skeleton of basic Frame is designed as self straining where no load is transferred to the ground except self weight of the Frame.

The Frame is designed for vertical load of upto the standard range and horizontal load of upto a fifth of the vertical load safe load. Vertical load is generally used for testing of major structural elements like beams and columns. The horizontal load is used for stimulating wind load on portal frames, trusses etc.



1. Hydraulic Ram
2. Load Cell
3. Material under test

The basic Frame consists of:

- 1) Top Rectangular Frame (TRF)
- 2) Bottom Longitudinal Girder (BLG)
- 3) Columns (C)
- 4) Upper Cross Beams (UCB)
- 5) Lower Cross Beams (LCB)

The UCB and LCB move along longitudinal direction.

Proper placing and positioning of load is ensured by means of the UCB, while the LCB are moved in such a way as to ensure proper span of the member to be tested. Beams, columns and slabs can be tested in the Loading Frame.

### ACCESSORIES REQUIRED

- a) Loading arrangement
  - 1) Manually operated Hydraulic Jack
  - 2) Electrically operated Hydraulic Jack
- b) Multi-channel Digital Automatic Data Loggers for Strain measurement. Strain Gauges. Tool Kit etc.
- c) IEICOS Load Cells & Digital Load Indicators
- d) IEICOS Displacement Transducers & Digital Displacement Meters
- e) XY Recorders/Digital Printers.

## HYDRAULIC SYSTEMS

Electro Hydraulic System comprises an integral electrically operated multiplunger pump powered by a 3-phase motor. The unit is housed in the lower half of the control console. The pumping unit is connected to the loading unit through high pressure flexible hoses. The load can be regulated by controlling the movement of the ram with the help of a manually operated wheel valve provided on the front panel of the control console or by electrically operated motors. The release valve facilitates quick release of the pressure before a new specimen could be tested. The system is provided with automatic cut-off switch for protection against overload and power failure.

**Manually operated hydraulic system** consists of a hydraulic pump with a lever for operation and a pressure gauge which is connected to the hydraulic jack through a flexible hose.



Manually Operated Hydraulic System



Electrically Operated Hydraulic System

## IEICOS MULTICHANNEL DIGITAL AUTOMATIC DATA LOGGER FOR STRAIN AND RELATED PARAMETERS

This high speed digital data processing system scans and measures fully automatically multipoint static and dynamic data



detected by respective transducers/ strain gauges. The system consists of a digital indicator, automatic scanning box, with manual and automatic selection, DC power supply, balancing unit for strain-gauge bridges and transducers.

The system facilitates high resolution measurement of engineering units like load, pressure, torque, stress etc. using resistive and strain gauge transducers directly after setting pre-calibrated sensitivity. Optional facility can be built in for measurement of displacement, temperature and vibration.

Analog output terminals are also provided for recording on DC recorder. Optional facility can be incorporated to provide BCD signal output for digital printer or for further processing of the signal in the computer.

Digital indicator of 4½ digits (19999) is provided to read accurately  $\pm 1$  unit to  $\pm 19999$  units, which may be made to correspond to any engineering unit such as strain, load, force, torque etc.

### SPECIFICATIONS:

- No. of channels : 50/100/200 (Digital display of channel No.)
- Range :  $\pm 19999$  units with 1 unit resolution.

### FOR STRAIN GAUGE BRIDGE

- Input configurations : 1, 2 & 4 arm strain gauge networks.
- Resistance of strain gauge : Nominal 120 Ohms, 300 Ohms and 600 Ohms in 1, 2 & 4 arm active networks and other values in 2 & 4 arm active networks.
- Bridge balance : Ten-turn Potentiometer permits to get bridge balanced against difference in gauge resistances upto 1.5%.
- Bridge selection : Manual by digital selector switch.  
Auto by scanning system with the time interval between channels adjustable from 5 to 180 secs.

- Calibration and compensation facility : A calibration switch and circuit is provided either to calibrate or to compensate a preload. This circuit produces positive and negative signals equivalent to the strain  $\pm 1000$ , 2000, 5000 microstrains. This also facilitates the user to study very small dynamic strain over and above large static strain level after suppression of the strain level, which in turn increases the measurement range of the instrument correspondingly.
- Bridge excitation : Approx 5 Volts DC stabilised.
- Gauge factor adjustment : 1.5 to 4.5 continuous.
- Indication : Digital Panel Meter.
- Recorder output : 100 Milli Volts/1000 microstrains, across 1000 Ohms.
- Power supply : 230 Volts, 50 Hz AC Mains.

### IEICOS DIGITAL LOAD MEASURING SYSTEM

The Digital Load Measuring System comprises electronic load cells in a range of 10, 20, 50 and 100 tonnes and an indicator.

#### LOAD CELLS

Strain Gauge load cells are excellent Force measuring devices for measuring tension or compression whether the force is steady or unsteady.



#### IEICOS TEN CHANNEL DIGITAL LOAD INDICATOR

Provided with individual socket and bridge supply balancing facility for all transducers, this helps keep all the transducers energised for sensing load simultaneously. Load sensed by the respective transducers can be read on digital meter by manual selection of particular channel. This facilitates the study of distributed load.

Load Indicator has provision to provide analog output proportional to load, to enable it to be connected to a recorder. Optional facility can be incorporated to provide BCD signal output for digital printer or for further processing of the signal in the computer.



### IEICOS DIGITAL DISPLACEMENT MEASURING SYSTEM

#### DISPLACEMENT TRANSDUCERS

IEICOS Displacement Transducers (LVDT) provide output corresponding to displacement derived from compression or elongation.

The transducers provide high level electrical signals proportional to mechanical position for recording and control. A rod-shaped magnetic core positioned axially inside a coil assembly provides path for magnetic flux linking the coils. Movement of the core provides the output voltage in the coil. The transducers are to be used with digital displacement meters.

Range:  $\pm 20$ ,  $\pm 50$  and  $\pm 100$  mm.



Displacement sensors

#### IEICOS 10 CHANNEL DIGITAL DISPLACEMENT METER

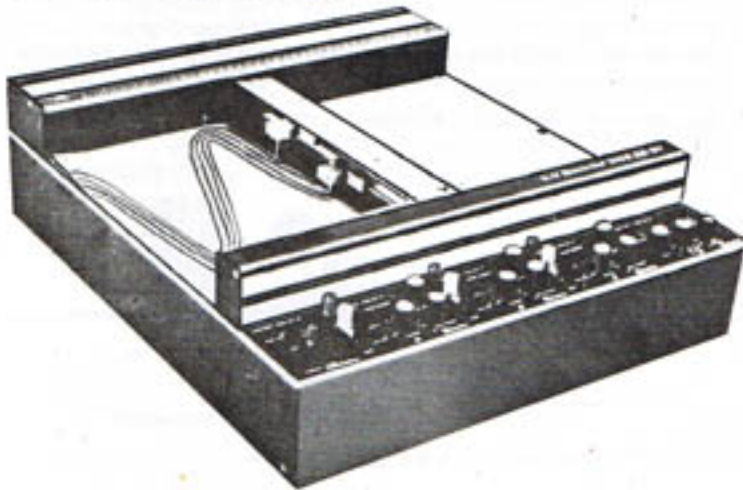
Electronic Digital Displacement Meter operated with displacement transducers to provide direct reading of displacement values. Instrument comprises an Oscillator, Carrier Wave Amplifier consisting of an AC Amplifier, a Phase Sensitivity Detector, DC Amplifier, Digital Meter and an Output for analog recording.

Provided with individual socket and excitation AC supply for all transducers, this facility helps keep all the transducers energised for sensing displacement simultaneously. Displacement sensed by the respective transducers can be read on digital display by manual selection of particular channel.



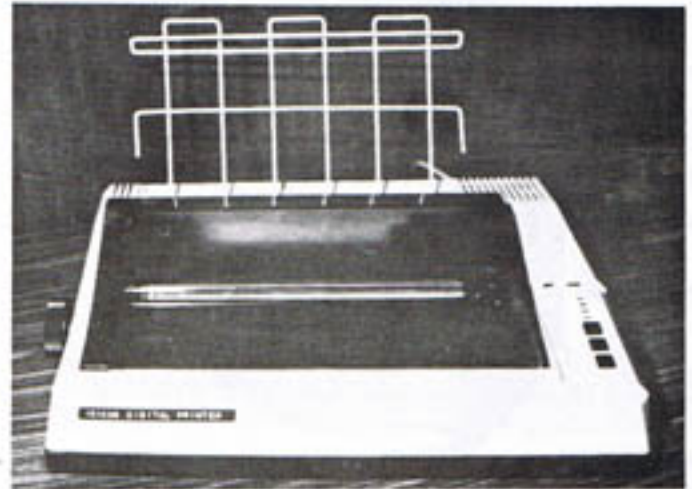
## X-Y RECORDERS

X-Y Recorders provide facility to draw a graph between two variables directly when there is instantaneous variation of the parameters. These recorders are manufactured employing the latest State-of-Art technology of Servo-mechanism. These can be used for recording both static and dynamic parameters. These facilitate the drawing of the yielding and the breaking point curves of various material under test.



## DIGITAL PRINTER (80 COLUMNS) WITH INTERFACE SYSTEM

The Electronic printer with interface system can be programmed to print data from the multi-channel system, to provide channel No. and respective measured quantity



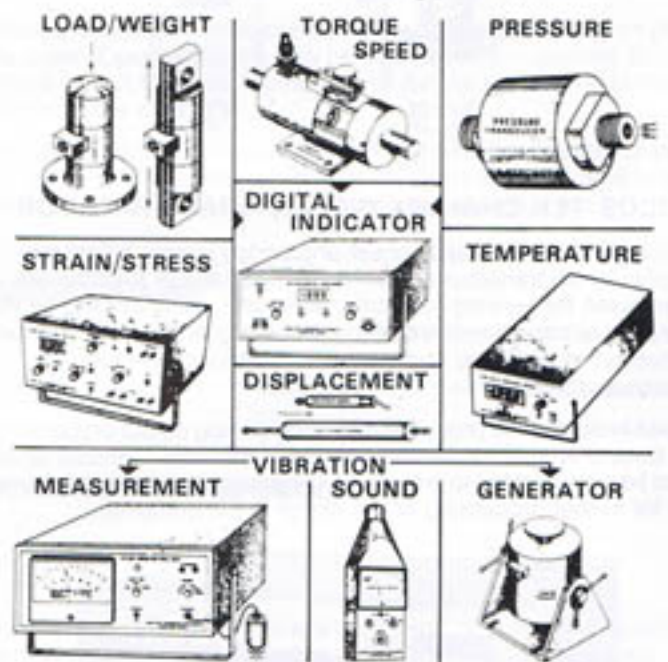
## INTERFACE SYSTEM FOR COMPUTER

Interface for connecting data input to computer with relevant software.

*Mechanical dimensions, location of components, controls and panel meters may be changed without notice to incorporate the latest state of art technology.*

**RANGE OF PRODUCTS: DIGITAL ELECTRONIC INSTRUMENTS** for measurement of load, force, weight, torque, expansion, motion, vibration, sound, temperature, fluid flow etc.  
**ELECTRONIC INDUSTRIAL CONTROLS** such as Vibration Switch, Proximity Switch, Timers, Pressure Switch, Temperature Controllers, Level Controllers etc.

**IN INDUSTRY, RESEARCH, EDUCATION**  
**WHEN RELIABLE & ACCURATE PROCESS**  
**MEASUREMENT & CONTROL TO BE MADE**  
**YOUR ONE SOURCE GUARANTEE**  
**IEICOS ELECTRONIC INSTRUMENTS FOR**



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