

Precise Digital Controller

For New, Used or Retrofit Applications!



The Precise Digital Controller is designed for manual or servo-equipped tension and compression testing machines. It is a presettable unit that simplifies materials testing and requires a minimum amount of training. The Precise features load, cross-head position and strain inputs plus enhanced closed-loop servo capabilities for accurate and repeatable testing. The Precise provides two control segments per test under load, position or strain servo control.

The Precise is an inexpensive and easier-to-use alternative to PC/Windows based materials testing systems. It can store three test procedures in memory so that the operator can perform a variety of tests quickly and error free.

Applications include testing plastics, film, textiles, nonwovens, rubber, adhesives, metals, wire plus a variety of products.

Standard Features

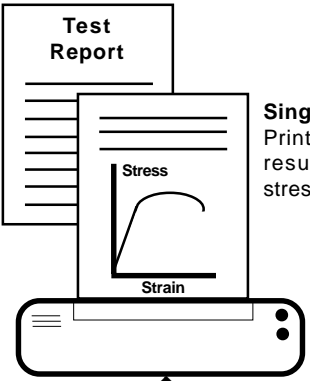
- Indicate load, load rate, position, position rate, strain, strain rate.
- Plot load, position or strain real-time.
- Save and recall four test procedures for accurate and repeatable testing.
- Password protected supervisor/operator modes allow test procedures to be locked under password so they cannot be changed inadvertently.
- Calculate key test parameters such as Peak Load/Stress, Offset Yield, Yield EUL, Modulus of Elasticity, Percent Elongation at Break and more.
- Calculate high, low, mean and standard deviation for a group of tests.
- Store up to 350 test results per test procedure to permanent memory. Test results include Date, Time, Specimen ID#, Specimen Area and Length plus all calculated test parameters.
- Generate hardcopy printouts of Group Test Reports and Single Test Reports which include an XY plot on an HP PCL3 enhanced compatible printer (ie. HP Deskjet/LaserJet).
- Use the WinCom Plus Data Communications Program to download test results and XY data to a remote computer for import into common spreadsheet and database programs. Plot multiple test curves on the same set of graph axes.
- Configure up to a 2 segment control profile with software selectable control channels that can be changed on the fly. Includes PID compensation.
- Integral emergency stop and start pushbuttons on servo equipped units.
- Select between English, Metric and SI engineering units.
- Calibrate up to 6 load cells and 6 extensometers with piecewise linear fit between points for maximum accuracy. All calibrations are password protected.
- Calibrations exceed ASTM E4/E83 accuracy requirements and feature high resolution and fast sampling rates in a simple proven design.
- Includes signal conditioning and excitation for a strain gauge load cell, pressure transducer or extensometer and a digital position encoder. Optionally, an LVDT conditioner can be supplied for AC extensometers.



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For a Total Solution to all of your Materials Testing Needs

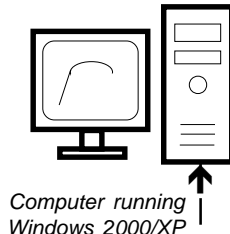
Group Test Report - Print a group of test results in tabular form on an HP DeskJet. Results include: date, time, specimen ID#, specimen area and length plus all calculated test parameters.



Single Test Report - Print the current test result including a stress-strain curve.

Hewlett Packard PCL3 enhanced compatible printer with centronics parallel port.

Use the **WinCom Plus Data Communications Program** to download test results and raw XY data to a remote computer via an RS232 port. Print/view results and stress-strain curves. Convert data and results to ASCII delimited format for import into common spreadsheet and database programs (option).



Computer running Windows 2000/XP

4 line x 20 character LCD with 3/8" H characters.

P1	9252 LB
LG	0.2511 in
EX6	24.981 %
T	0.15 in/min

7 Start	8	9 Stop
4	5 Gear	6
1 Home	2	3 Freeze
Zero (0)	.	

Jog Up Jog Dn

10000 LB

5.25" graphic display

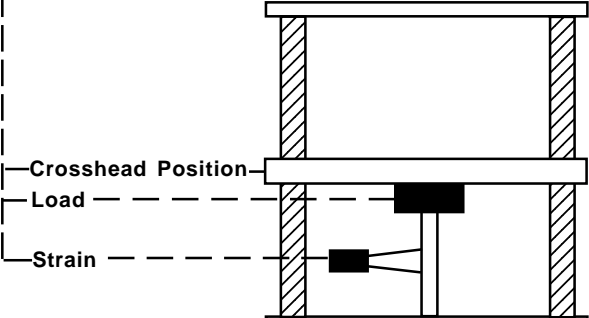
ID#	Proc	Store
Cntrl	Utils	Print
Setup	Analy	F1

Enter Esc

Precise Digital Controller

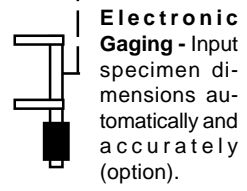
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The Precise Digital Controller comes standard with load, crosshead position and strain inputs. Up to 6 load cell and 6 extensometer calibrations can be stored to permanent memory. Optionally, an LVDT conditioner can be supplied for AC extensometers.



Crosshead Position
Load
Strain

New - Used - Retrofitted Electromechanical or Hydraulic Testing Machine



Electronic Gaging - Input specimen dimensions automatically and accurately (option).

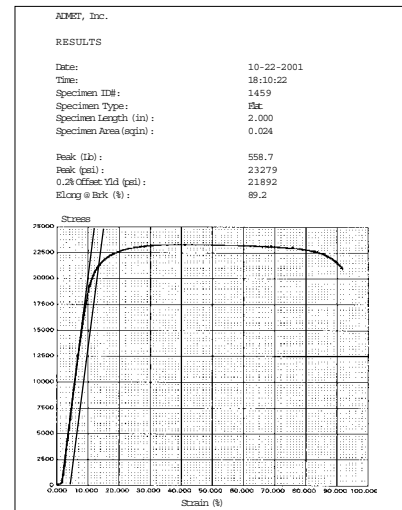
Servo Control - Specify up to a 2 segment control profile under load, position or strain control.

System diagram showing many of the Precise Digital Controller's capabilities.

Test Reports

A Single Test Report and a Group Test Report can be printed from the Precise Digital Controller. The Group Test Report is a tabular printout of a group of like tests. The report includes date, time, specimen ID#, specimen area and length plus all calculated test parameters. A statistical summary of all test results is also provided.

Facing is a sample of a Single Test Report. Included in the plot header is date, time, specimen ID#, specimen area and length plus all calculated test parameters. Prior to printing a Single Test Report, the operator defines the graph axes from the list of active channels. Both reports can be output to an HP DeskJet/LaserJet printer connected directly to the Precise or can be downloaded to a remote PC running the WinCOM Plus Data Communications and Plotting program.



Single Test Report printed on an HP DeskJet.

Simple Menu Driven Programming

Intuitive menu hierarchy insures fast learning curve in setting up test procedures, specifying servo control profiles in servo control systems and selecting analyses:

Test Procedure Setup

- 1) **Threshold**
Specify the load at which data logging begins
- 2) **End of Test**
Input as a percentage of peak load a value that defines the end of test
- 3) **Specimen Type**
Select specimen type and input specimen dimensions
- 4) **Engineering Units**
Specify load, position and strain units
- 5) **Live XY Graph**
Select which active channel (load, position, or strain) to display on X and Y axis of the graph.
- 6) **Load Cell No.**
Select which load cell calibration to use for a test procedure. The Precise can store up to 6 load cell calibrations
- 7) **Position**
Activate position channel
- 8) **Extn No.**
Select which extensometer calibration to use for a test procedure. The Precise can store up to 6 extensometer calibrations

Servo Control Setup

- 1) **Test Profile**
Specify up to two servo control steps under load, position or strain control
- 2) **Home Rate**
Input speed for returning home
- 3) **Jog Rate**
Input speed for manual jogging of test frame
- 4) **Post Test**
Specify post test action to stop or automatically return to home position
- 5) **Control Gains**
Specify PID gains for servo tuning of load, position and strain channels

Analysis

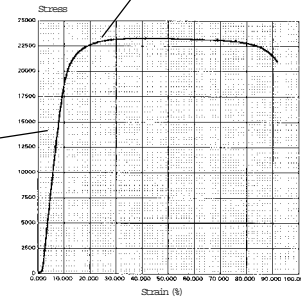
- 1) **Select Analysis**
Select which analyses to calculate including peak load/stress, modulus of elasticity, offset yield, percent elongation and more
- 2) **Elastic Slope Pts**
Select automatic or manual calculation of elastic modulus
- 3) **Auto Freeze**
Select autofreeze to automatically freeze the extensometer channel when sufficient data has been collected to calculate all of the requested analyses
- 4) **Re-Calculate**
After test is complete, recalculate analysis results. Useful when it is desired to change an analysis setup parameter

Servo Control Precise Digital Controller

Specify up to a 2 segment control profile under load, position or strain control. This is useful in running procedures in accordance with ASTM specifications for the elastic portion of the test curve then switching to accelerated rate after sample yield until sample break is achieved. For example see diagram facing for how a two step servo-control profile was used in a tension pull.

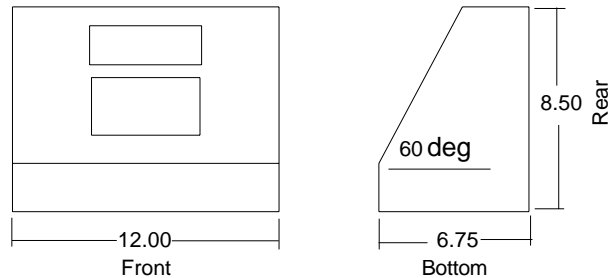
STEP 2: Position control at 2 in/min. Automatically switches to step 2 after yield and continues until sample break.

STEP 1: Strain control at .05 in/in/min. Elastic Portion of curve. Strain rate set according to ASTM E8 specification.



Mounting

The Precise Digital Controller is designed to sit on top of a bench or table top or can be mounted with an angle bracket to a vertical column. All electrical connections are from the rear.



Technical Specifications

Load and Strain Input Compatibility

Full Bridge Strain Gage Transducers:
Sensitivity: User selectable from 1mv/v.
Excitation: 4.5 or 9 Vdc
High Level Input:
Range: +/- 4.5 Vdc
Resolution: > 1 part in 100,000

Crosshead Position Input Compatibility

Type: Incremental Encoder
Counter Resolution: 32-bit
Input Frequency: 1 MHz max.
Inputs: TTL Line Driver
Excitation: 5 V

Analog X-Y Recorder Compatibility

Range: 0-10V @ 5 ma max.
Resolution: 14-bit

Servo Control Output

Unit employs PID control algorithm
Range: +/-10V @ 5 ma max.
Resolution: 12-bit

Printer Compatibility

Uses Hewlett Packard PCL3 enhanced Printer Control Language. Centronics parallel port interface required.
HP DeskJet
HP LaserJet

Upper Display

4 line x 20 character LCD - 0.38" high
Includes LED backlight.

Lower Display

5.25" Graphic Display
Blue/White with CFL backlight

Power Requirements

85-265 VAC (50-60 Hz)
Consumption: 40 Watts

Ordering Information

Model #:

PRCS-DA: Precise Digital Controller for manually operated machines
PRCS-S: Precise Digital Controller for servo-equipped machines

Options:

Dual Analog XY Recorder Output
Shunt Calibration Check
WinCom Plus Communications Program
HP DeskJet Printer

Contact the factory for applications and ordering assistance.

Service & Training

ADMET, Inc. strives to make its materials testing products powerful and easy-to-use. We offer free phone support and fee based in-house and on-site training seminars describing how to get the most out of your machine. We also offer seminars on how to install our products.