

# 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.***

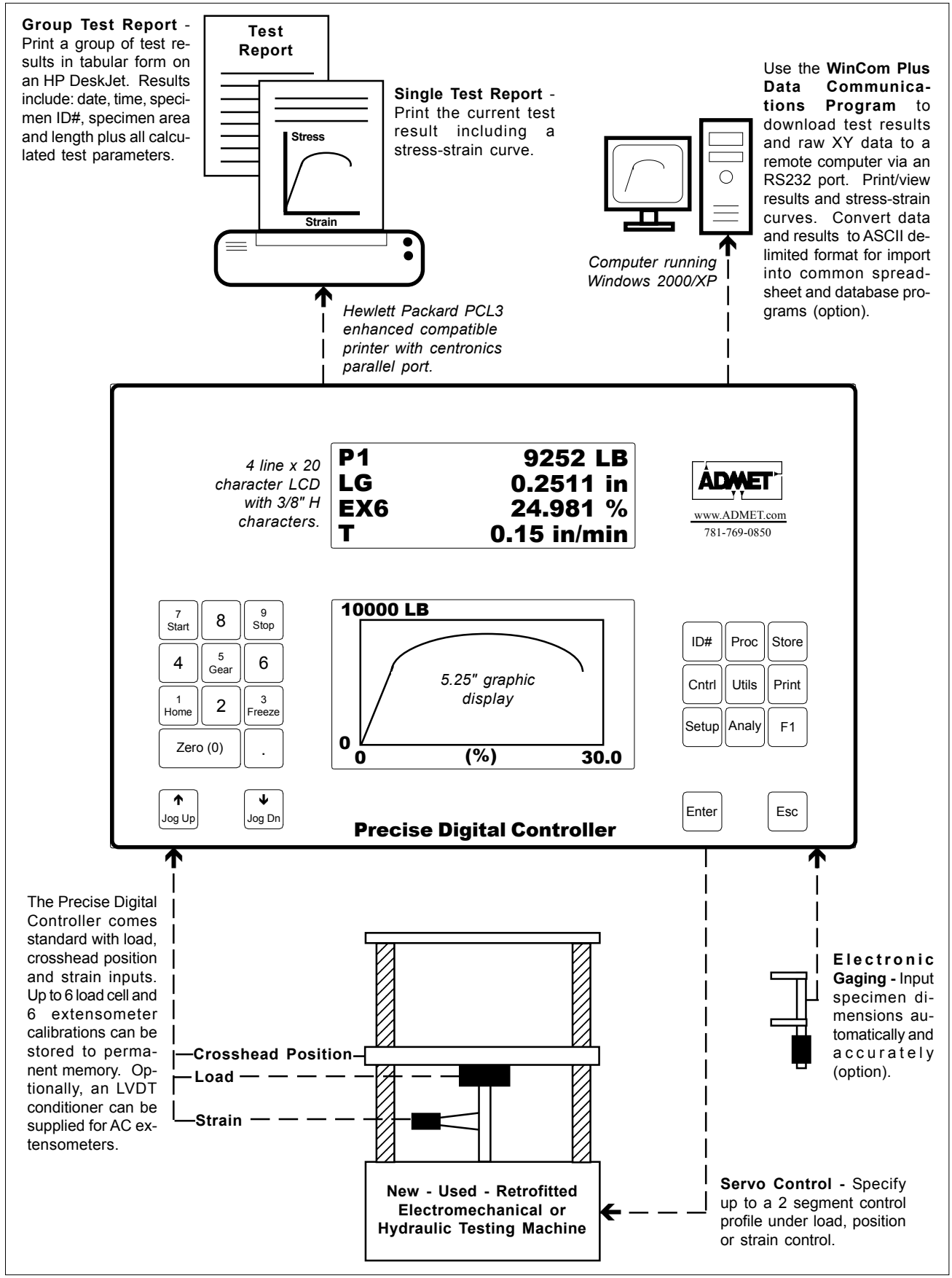
## Standard Features

- 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.



*'Measure the Difference'*

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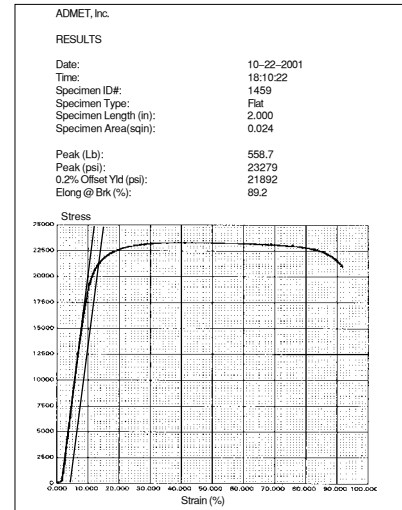


System diagram showing many of the Precise Digital Controller's capabilities.

## 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

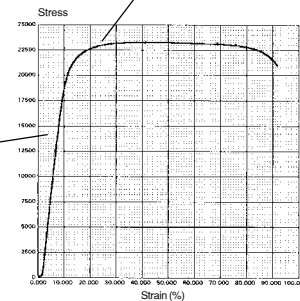
- 1) **Select Analysis**  
Select which analyses to calculate including peak load/stress, modulus of elasticity, offset yield, percent elongation and more
- 2) **Elastic Slope Pts**  
Select automatic or manual calculation of elastic modulus
- 3) **Auto Freeze**  
Select autofreeze to automatically freeze 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.

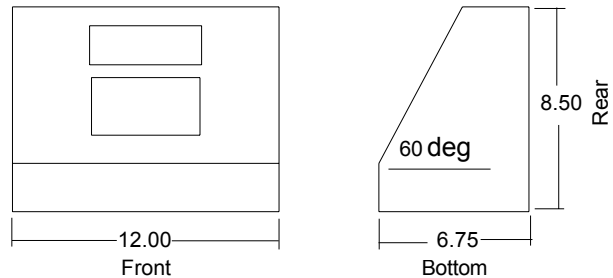
**STEP 1:** Strain control at .05 in/in/min. Elastic Portion of curve. Strain rate set according to ASTM E8 specification.

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



## 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.