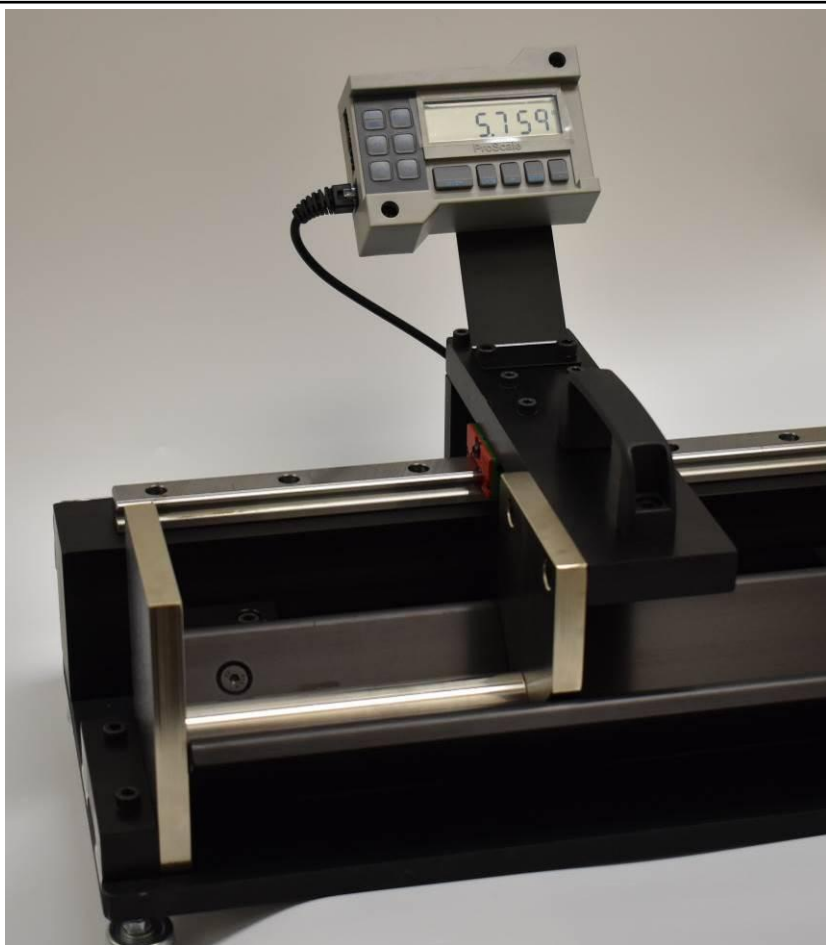


Accurate
TECHNOLOGY INC.
Linear Digital Measuring Systems

**ProTableTM
Tube**



Operation Manual
For ProTable Tube
Serial Number

System Serial Numbers

ProTable:



Readout:



Encoder:



Scale:



Factory Scaling Factor: 1.00000

DO NOT CHANGE the Scaling Factor setting. DOING SO WILL VOID YOUR CALIBRATION. If the Readout is reset or replaced, reprogram it with the Scaling Factor shown above.

[See Section 4: PROGRAMMING, PR 13](#)

Custom settings for ProTable Systems:

Pr 39 – Non-Linear Compensation Enable set to: 1 (on)

Pr 40 – Non-Linear Compensation Interval set to: 5.0000

Pr 41 – Temperature Compensation Enable set to: 1

Pr 44 – Temperature Comp. Coefficient set to: 150

If your ProTable's Readout, Scale or Encoder is replaced, it will require re-calibration.

[See Section 4: PROGRAMMING, PR39 & PR40](#)

WARRANTY

Accurate Technology, Inc. warrants the ProScale based Measuring Systems against defective parts and workmanship for 1 year commencing from the date of original purchase. Upon notification of a defect, Accurate Technology, Inc., shall have the option to repair or replace any defective part. Such services shall be the customer's sole and exclusive remedy. Expenses incidental to repair, maintenance, or replacement under warranty, including those for labor and material, shall be borne by Accurate Technology, Inc. (Including freight or transportation charges during the first 30 days).

Except as expressly provided in this warranty, Accurate Technology, Inc. does not make any warranties with respect to the product, either expressed or implied, including implied warranties of merchantability or fitness for a particular purpose, except as expressly provided in this agreement.

Accurate Technology, Inc. shall not be liable for any special, incidental, or consequential damages or for loss, damage or expense directly or indirectly arising from the customer's use of or inability to use the equipment either separately or in combination with other equipment, or for personal injury or loss or destruction of other property, or from any other cause.

To request repair work, (either warranty qualified parts or not) contact Accurate Technology, Inc. directly by phone, fax, or e-mail. A [Returned Merchandise Authorization \(RMA\) number](#) is required before returning a product for repair.

Accurate Technology, Inc.

+1 828.654.7920 1.800.233.0580 +1.828.654.8824 (F)

www.proscale.com sales@proscale.com

P/N 800-0200-002, Revision B
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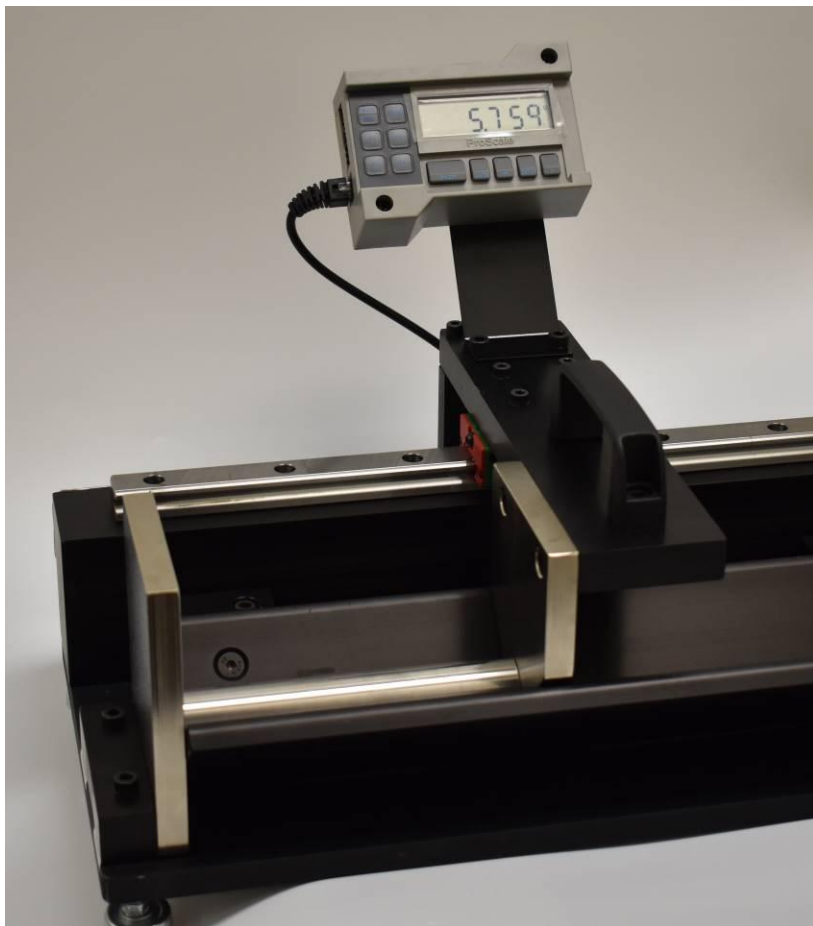
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Introduction

ProTable Tube™ is an application specific contact type dimensional measuring system specifically designed for the tube and pipe industries. It is ideal for Quality Control or Quality Assurance applications in both controlled and non-environmentally controlled areas of manufacturing.



ProTable Tube Specifications

Measuring Range:

ProTable Tube 40	Up to 40 inches, 1000 mm
ProTable Tube 60	Up to 60 inches, 1500 mm
ProTable Tube 80	Up to 80 inches, 2000 mm
ProTable Tube 100	Up to 100 inches, 2500 mm
ProTable Tube 120	Up to 120 inches, 3000 mm
ProTable Tube 145	Up to 145 inches, 3600 mm

Accuracy: $\pm .005$ inches, .12mm over entire range

Resolution:

.1inch	.1mm	.1cm	or
.01inch	.01mm	.01cm	or
.001inch	.01mm	.001cm	or
.0005inch	.01mm	.001cm	

Repeatability: .01mm or .001cm or .001in

Readout Range: ± 999.999 in
 ± 9999.99 mm; ± 999.999 cm

Operating Temp: 45 to 95°F

Temp Coefficient: 13ppm / °F (programmed into DRO)

Power: One CR123 Lithium Battery
(custom units may use 12-24VDC)

Battery Life: 5-6 months

System Warranty: One year from date of purchase.

SPC Output Format: Digimatic® SPC

Encoder: Inductive Series II encoding system

Max. Slew Rate: 2000 mm/second

All ProTables are manufactured in the USA

Assembly

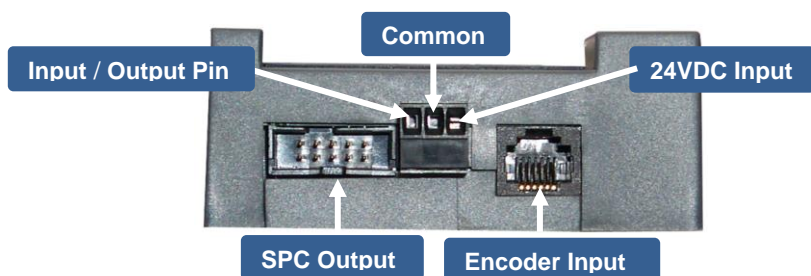
The ProTable Tube is designed to be a turnkey product and is near ready to use out of the box. Some minor assembly is required prior to use. Complete the following:

1. Remove the ProTable Tube from its container and unwrap the moving stage assembly.
2. Install the digital readout onto the moving stage with the provided M6 bolts and M5 wrench.
3. Plug in the encoder's modular plug into the jack located on the side of the readout.
4. Be sure that the encoder is firmly engaged under the guide clip located on the rear of the main bearing beam.
5. Close the jaws and while closed, momentarily press and release the DATUM button on the readout. The display should now show 0.000 inches (or 0.00mm).

12-24VDC Operation

The standard Digital Readout operates on one CR123 lithium battery or 12-24VDC. The readout uses a multi-purpose plug-in connector for power (as well as input and output signals.)

[See Section 2: CIRCUIT BOARD JUMPERS, PAGE 13](#)



Initial Set-up

The initial parameters such as a datum point, measurement units, and resolution are factory set for your ProTable Tube System.

Measurement Units: The measurement units that are displayed (inch, mm, cm) are selected with the UNITS Key.

Current Position: The Readout allows the current position to be easily configured, using the +, - & DATUM Keys.

Reference Point: The Readout allows a reference point (zero or other value) to be easily recalled using the DATUM Key. The value of this reference point is programmed at Programming Parameter Pr1.

Reading Direction: The direction of the reading as the system is moved is programmed using Programming Parameter Pr2.

Resolution: The resolution of the displayed units is programmed using Programming Parameter Pr4.

Calibration

Your ProTable Tube has been calibrated at the factory using NIST traceable gage bars.

ProTable Tube is based on the ProScale measurement system, which is a passive device in terms of its accuracy. When ProTable is calibrated at the factory, a scaling factor in the digital readout is sometimes used to correct for linear errors.

DO NOT CHANGE THIS SCALING FACTOR; DOING SO MAY VOID YOUR CALIBRATION. If your readout is replaced or reset to factory defaults, reprogram the factory scaling settings (shown on page 2) to ensure optimal accuracy.

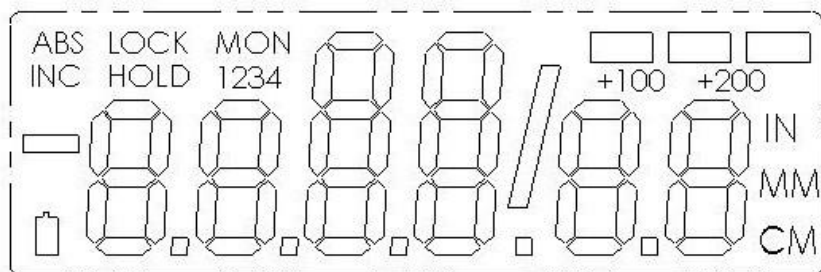
ProTable measurement systems have been designed to minimize mechanical measurement errors*. However, changes in mechanical soundness (such as loose bearings), table deflection (due to a non-level surface, or large loads), or severe temperature changes can affect the accuracy and repeatability of the entire system. In addition, inconsistent measuring techniques (such as multiple operators) might contribute to measurement errors. A Gage R & R study should be considered if numerous operators will be using the ProTable.

Readout



ProTable Systems use a ProScale General Purpose Digital Readout with built-in Temperature and Non-Linear Compensation functions.

LCD Segments



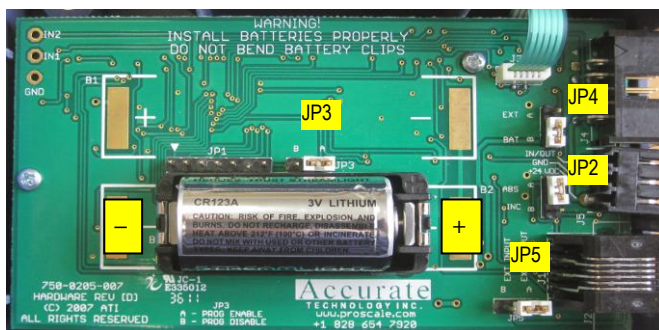
The figure above illustrates all the segments available on the LCD

Pressing and holding the ON/OFF and UNITS keys for 10 seconds with power OFF will perform a full segment LCD test, display the current firmware version, AND RESET ALL PROGRAMMING PARAMETERS TO FACTORY DEFAULT VALUES.

* Internal jumper **JP3** must be set to the Program Enable position to allow the DRO to be reset to factory defaults as described above.

[See Section 2: CIRCUIT BOARD JUMPERS](#)

Circuit Board Jumpers



JP1 **FACTORY USE ONLY**

JP2 **FACTORY USE ONLY**

Position A ONLY

JP3 **Programming Lock-out**

Front panel programming of the Readout can be enabled or disabled through the use of this jumper. **Factory set for ProTable Systems to B position.**

Position **A**: Front panel Programming is *enabled*

Position **B**: Front panel Programming is *disabled*

When programming is disabled, the user cannot access the programming functions via the front panel as described in the [Section 4: PROGRAMMING](#). This provides a method of configuring the Readout with specific parameters for operation and then preventing unauthorized or accidental configuration changes from the front panel.

JP4 **Readout Power**

Default = Position B

The Readout operates on an internal CR123 lithium battery, or a supplied 12-24VDC. When this jumper is installed in position A, the Readout is powered by an external DC power source via the power connector. When this jumper is installed in position B, the Readout is powered from the internal battery.

JP5 **Input/Output Selection**

Default = Position A

The Readout has connections used for External Power or an Input/Output connection. This jumper is used to configure the connections as Inputs or Outputs.

In position **A**, the connections are configured for OUTPUT.

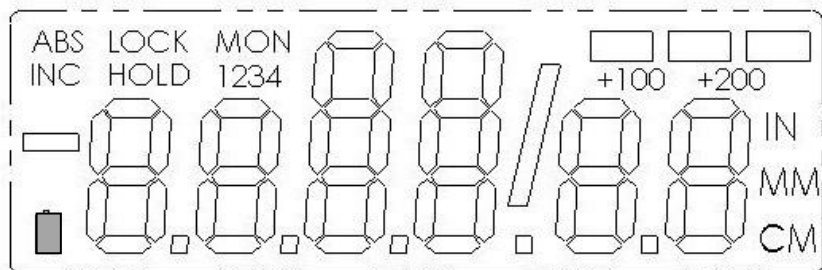
In position **B**, the connections are configured as INPUTS

[See: Advanced Hardware Features, Pg 32](#)

Replacing the Battery

When the Readout battery needs to be replaced, a battery indicator will appear in the lower left corner of the LCD (symbol looks like a battery, as shown below). A battery test can be performed anytime by pressing and holding the **DATUM** key for 6 seconds.

Operation below 2.7V is not recommended. When battery voltage drops below 2.6V, the readout will turn itself off until the battery is replaced.



To replace the battery:

Remove the screws in the upper right and lower left corners. Pull the cover off. Remove the old battery. Install a new CR123 battery noting the proper orientation. Replace the cover and screws.

Maintenance

A regular schedule for cleaning is recommended.

V-channel, Jaw Faces, Scale, and Readout: These components should be kept free of dust, dirt, and other residue as much as possible. These parts can be cleaned using compressed air (up to 80psi), or by wiping with a nonabrasive cleaner. DO NOT use solvent based cleaners to clean the measurement scale or encoder.

Bearing Rails: The steel bearing rail should be kept as clean as possible. There is a grease zerk located on one end of the bearing block. The bearing should be greased every few months or more often, depending on use. A light coating of machine oil (3 in 1 or similar) should be applied to the bearing rail weekly to prevent oxidation (rust) from accumulating on the rail surface.

Measure a Part

1. Slide the moving Jaw assembly to the right until the part to be measured will fit between the jaws.
2. Place the part to be measured against the fixed jaw and into the continuous V block support.
3. Slide the moving stage up against the part to be measured. The part length is displayed on the Readout.
4. Press the SEND key to send the measurement data to the SPC output (and the RF transmitter, if equipped).

Measure Parts Relative to a Reference

1. Slide the moving Jaw assembly to the right until the reference part will fit between the jaws.
2. Place the reference part into the continuous V block support, and against the fixed jaw.
3. Slide the moving assembly up against the reference part.
4. The reference length is displayed on the Readout. Press and hold the ABS/INC button for 3 seconds to switch to relative (INC) measurement mode. (The ABS indicator will turn off and INC indicator will turn on when relative/incremental mode is in use.)
5. Measure the production part using the same method as in steps 1 - 3. The difference in length between the reference and the production parts is shown on the Readout. (A negative number indicates the production part is shorter than the reference part.)
6. If desired, the difference can be transmitted by pressing the SEND key.
7. Press the ABS/INC key for 3 seconds to return to the absolute (ABS) mode when done making relative/incremental measurements.

Readout Operation and Programming

Key Timing

Several keys on the Readout have multiple functions. The function executed when the key is depressed is dependent on how long the key is depressed. Therefore, how long the key is depressed is important. This manual uses the term “*Momentarily*” to describe a key depression of less than .8 seconds, and “*Press and Hold*” to describe a key depression of longer than 1 second.

	<i>Momentarily</i>	<i>Press & Hold</i>
How long a key is pressed?	Less than .8 seconds	More than 1 second
When is the key function executed?	On key release	While holding

For *Momentary* operations, Functions are executed when key is released.

For *Press & Hold* operations, Functions are executed after key has been depressed for the prescribed amount of time.

See the chart below for a summary of the functions performed by these keys:



	<i>Momentarily</i>	<i>Press & Hold</i>
On/Off Key	Turns Readout power On or Off	No effect
Units Key	Cycles through measurement units: inches, fractions, mm	No effect
Plus (+) Key	Increments displayed value	Increments faster
Datum Key	Forces displayed reading to programmed Datum value	After 6 seconds displays battery voltage After 9 seconds displays Temperature
Minus (-) Key	Decrements displayed value	Decrements faster

For a video demonstration of KEY TIMING, see our YouTube channel.

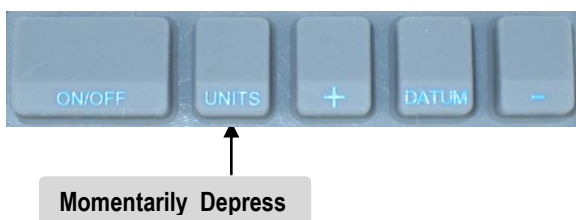
Key Functions

On/Off Key



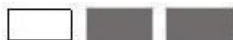
Momentarily depress the **ON/OFF** key to turn the Readout on or off. (The Readout Firmware version displays for two seconds at power-on.)

Units Key

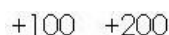


Momentarily depressing the **UNITS** key will display measurement/position information in inches, fractions or millimeters (or centimeters). With each key press, the readout will cycle through decimal inches, fractions (16ths, 32nds, 64ths) and millimeters (or centimeters). To set the measurement modes that are displayed when pressing the **UNITS** key use [Programming Parameter \(Pr11\)](#).

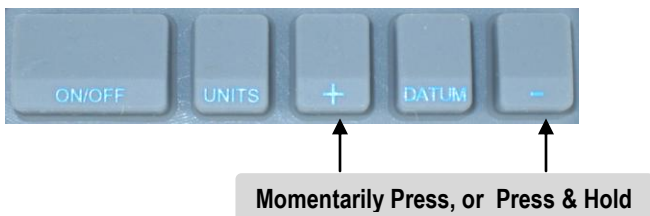
When the Readout is in 1/16 or 1/32 inch fraction mode, a series of “bars” in the upper right corner of the LCD may appear each representing 1/64th of an inch. (ie. When in 1/16 inch mode and three bars appear, the measurement displayed is rounded *down* to the closest 1/16 inch and each illuminated bar indicates an additional 1/64 of an inch of additional measurement.) For better resolution, switch to 1/32 or 1/64 mode. For the best resolution, switch to a decimal mode.



In Fractions mode, when the measurement is greater than 99 63/64 inches, **+100** and/or **+200** will illuminate in the upper right portion of the LCD to indicate this amount must be added to the displayed reading. (ie: If the measurement is 154 5/8 inches, 54 5/8 and **+100** will appear on the LCD, If the measurement is -307 23/64 inches, - 7 23/64, **+100** and **+200** will appear on the LCD.



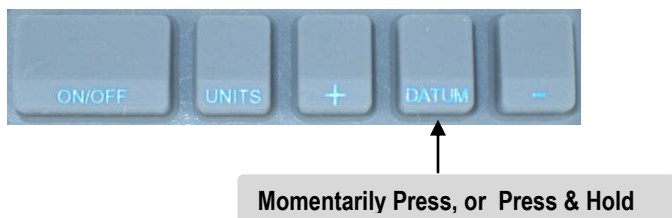
Plus (+) & Minus (–) Keys



Momentarily depressing the **+** or **–** key will increment or decrement the current displayed value by one unit of measurement. (in, mm, cm or 1/64)
Press & Hold the **+** or **–** key to continue to increment or decrement the displayed value. The longer the key is depressed, the faster changes occur.

The **+** & **–** keys may be locked out to prevent accidental entries by using [key lock](#) and/or [Programming Parameter \(Pr3\)](#).

Datum Key



Momentarily depressing the **DATUM** key forces the Readout to a user programmed value. This can be zero or any other displayable value.
Set the DATUM key value by programming [Parameter \(Pr1\)](#).

Press and Hold the **DATUM** key for 6 seconds to display the battery voltage.

Press and Hold the **DATUM** key for 9 seconds to display the temperature. The temperature is displayed in “F” or “C” based on the current units setting (Inch or Metric).

The **DATUM** key may be locked out to prevent accidental entries by using [key lock](#) and/or [Programming Parameter \(Pr3\)](#).

Basic Readout Functions

Auto on/off

To prolong battery life, the Readout turns off after a period of no movement or key activity. The Auto On/Off function is programmable from 0 (always on), to 240 (minutes) before entering sleep mode. (Default is 15 minutes.) Press the **ON/OFF** key or move the measurement system to wake up the Readout. Any key press or system motion while the Readout is awake restarts the Auto On/Off timer. Use [Programming Parameter \(Pr12\)](#) to set this interval.

Reading Direction

If the direction of readings, (increasing vs. decreasing) is opposite the desired direction, use [Programming Parameter \(Pr2\)](#) to reverse the Reading Direction.

Resolution

Four selectable display resolutions are available.
Fractional inches display mode is not affected by resolution changes.

.1in	.1mm	.1cm	or
.01in	.01mm	.01cm	or
.001in	.01mm	.001cm	or
.0005in	.01mm	.001cm	

Use [Programming Parameter \(Pr4\)](#) to set the displayed resolution.

Data displayed (and sent to the SPC output) is auto-ranging. This means the selected resolution may be temporarily overridden if the measurement or position to be displayed exceeds the maximum displayable value for the programmed resolution. The Readout will continue to automatically reduce the resolution to 1 decimal place or until an allowable resolution is achieved. The available resolutions are:

Inch Resolution	Maximum Value (Inches)
4 decimal places	99.9999
3 decimal places	999.999
2 decimal places	9999.99
1 decimal place	99999.9
Millimeter Resolution	Maximum Value (mm)
2 decimal places	9999.99
1 decimal place	99999.9

Measurement Units

The measurement units displayed on the Readout are user configurable. The table below provides a matrix for selecting the measurement units that may be displayed when pressing the **UNITS** key.

Use [Programming Parameter \(Pr11\)](#) to set this value.

Programming Parameter Pr 11 Value	Measurement Units Displayed
0	All inch units, and millimeters
1	Millimeters only
2	Decimal inches and millimeters
3	Decimal inches and centimeters
4	All inch units, and centimeters
5	Centimeters only
6	Decimal inches only

Key Lock

The Readout provides a function that can “lock-out” the position adjustment keys (**+**, **DATUM** & **–**) to prevent accidental changes of the displayed value.

To activate Key Lock: *Press and Hold* the **ON/OFF** key and, while pressing it, *Momentarily* depress the **UNITS** key, then release both keys. The word **LOCK** will be displayed in the upper left corner of the LCD.



When **LOCK** is displayed, the **+**, **DATUM** and **–** keys become inactive.

To de-activate the Key Lock: *Press and Hold* the **ON/OFF** key and, while pressing it, *Momentarily* depress the **UNITS** key, then release both keys.

Key Lock may also be enabled through Readout Programming.

See [Programming Parameter \(Pr3\)](#) to enable this function.

Upper/Lower Limits

The Digital Readout can display either **LL** for Lower Limit or **UL** for Upper Limit if a pre-programmed upper or lower reading is exceeded. Upper and Lower Limits are set with **Programming Parameters Pr28 and Pr29** but are only active if **Pr27** is set to 1. The LCD display toggles for 2 seconds between current position and **LL** if the Lower Limit is exceeded, or **UL** if the Upper Limit is exceeded. This continues as long as either limit is exceeded.

[See Programming Parameters \(Pr27, 28, 29\).](#)

In addition, the programmable output can be configured to activate on the DRO when either the Upper or Lower limit is exceeded.

[See PROGRAMMABLE OUTPUT OPERATION.](#)

Linear Scaling

This function is useful when the actual measurement or position must be multiplied or divided before being displayed on the Readout.

This function has a range of 0.0001 to 9.9999 allowing the actual measured value to be multiplied or divided in very small or very large increments.

See [Programming Parameter \(Pr13\)](#) for additional information.

See page 2 of this manual for the Linear Scaling Factor applied to your ProTable system.

Advanced Readout Functions

The Readout has two measurement indexes. One is called ABS (absolute) and the other INC (incremental). The ABS measurement setting is designed to allow a user to set an origin point when jaws are closed. The INC measurement setting is designed to take relative or incremental measurements from one point to another. The settings operate independently allowing separate position offsets to be programmed for ABS and INC. The origin, or known position of the measuring system is not lost when using the INC measurement mode and is recalled and displayed when the Readout is returned to ABS mode.



Absolute (ABS) Measurements

The Readout automatically enters ABS mode when power is first applied. This is indicated by **ABS** in the upper left corner of the LCD. While in ABS mode, all position measurements are related to the current system reference point.

To enter INC (Incremental) mode:

Press and Hold the **ABS/INC** key for 3 seconds.

NOTE: To change the timing of this key to *Momentarily*, see [Programming Parameter \(Pr22\)](#).



Incremental (INC) Measurements

While in the INC mode, **INC** is shown in the upper left corner of the LCD. When INC mode is initially entered, the displayed position will change to reflect a new reference point at the current position of the Encoder. This is typically a position of zero (**0.00**) but may be changed by using the **+** or **-** Key to enter an offset. Moving the Jaw in either direction will display the distance moved from the initial INC starting point (plus any offset). To complete another incremental measurement from the new position, *Momentarily* press the **ABS/INC** key. The Readout will again change to zero (or the previously programmed offset). To return to the ABS mode, *Press and Hold* the **ABS/INC** key for 3 seconds.

Send

The Readout has an output port that may be used to send measurement or position information to another device (i.e. a PC) via a wireless transmitter.



See [Section 6: Accessories](#)

After connecting a transmitter or cable to the 10 pin output connector on the Readout, the user may initiate the data transmission by momentarily pressing the **SEND** key. This will cause **Snd** to display on the Readout for 1 second to show activation of the send function (even if no device is attached to the Readout).

All inch modes are transmitted as decimal inches. All metric modes are transmitted as millimeters. The position data transmitted is typically the displayed position on the LCD, with the exception of when Special Function Mode is set to Measurement Accumulation or Statistics modes (See [Advanced Readout Functions](#)). In those modes, the displayed (or calculated) values are sent, NOT the current position.

The data format and connector style of the output port is Mitutoyo [Digimatic](#). This is an industry standard that can be interfaced with most products including multiplexers & RS232 converters (See [Section 6: Accessories](#)).

Offset Addition

Offset addition allows values to be pre-programmed that are then added to the measurement, and the sum is displayed on the LCD. This function allows the user to switch from one reference point to another.

See [PROGRAMMING PARAMETERS \(Pr30, 31, 32, 33 & 34\)](#)

The Readout supports up to 4 user-definable offsets that may be added to the ABS position.

[PROGRAMMING PARAMETER Pr30](#) enables or disables this function.

[PROGRAMMING PARAMETERS Pr31, 32, 33 & 34](#) are used to configure this function.

When enabled, the user can scroll through the active offsets by pressing the **F1** key. The numbers **1, 2, 3 or 4** will be displayed on the upper left part of the LCD with each press of **F1**. When no numbers are displayed, no offset addition is active.

When the number **1** is displayed in the upper left corner, Offset Addition Preset # 1 ([Pr31](#)) has been applied to the measurement and the result is now displayed on the LCD.



Similarly, when the number **2** is displayed in the upper left corner, Offset Addition Preset # 2 ([Pr32](#)) has applied to the measurement.

When the number **3** is displayed, Offset Addition Preset 3 ([Pr33](#)) has been applied to the measurement, and when the number **4** is displayed, Offset Addition Preset 4 ([Pr34](#)) has been applied to the measurement and the result displayed.

1234

Advanced Programming Functions

Advanced Programming Functions allow the Readout to perform special tasks or invoke custom programming. These tasks interact with the **F** keys to perform functions related to a specific task or programming operation.

Note: The Advanced Functions configurable via [Pr24](#) are mutually exclusive of each other. The table below provides a summary of the functions available.

Programming Parameter Pr24 Value	Function
0	No Advanced Functions.
1	F3 = MON F4 = HOLD F2 = SPC delete
2	Go/No Go gauge operation
3	Measurement Accumulation
4	Statistics Mode

Note: When [PROGRAMMING PARAMETER Pr24](#) is set to **0**, the **F2**, **F3** & **F4** keys are disabled and have no function. However, the **F1** key, used only for [Offset Addition](#), is independently controlled by Pr30.

Monitor

Set Programming Parameter [Pr24](#) = **1** to enable this function.

The Readout can monitor a position to detect drift or measurement variance. To activate the Monitor mode, position the Encoder (system) to the desired location and *Momentarily* press the **F3** key. The **MON** symbol will illuminate on the LCD to indicate Monitor mode is active.



If the Encoder moves outside the programmed tolerance the LCD reading flashes, indicating a drift condition. When the Encoder is moved back within the programmed tolerance, the displayed reading will stop flashing.

MON

To exit the monitor mode, *Momentarily* press the **F3** key. The **MON** symbol will turn off and the currently displayed position will stop flashing.

Monitor can only be activated while in the [ABS measuring mode](#). If the **ABS/INC** key is depressed, or the normal operational mode is changed (enter programming mode or sending a data transmission), the Readout will automatically exit Monitor mode.

NOTE: When the Monitor mode is enabled AND the [programmable output](#) is configured for drift monitoring, the output will not become active until the system has remained 'out of position' for at least 2 seconds.

Hold

Set Programming Parameter [Pr24](#) = 1 to enable this function.

The Readout provides a feature that allows the displayed measurement or position to be “held” or frozen. This allows information to be captured on the Readout and held for later viewing regardless of the current Encoder position.

To activate the HOLD, *Momentarily* press the **F4** key. **HOLD** will be displayed in the upper left corner of the LCD. The currently displayed position and selected key presses will be held.

To release the HOLD feature, *Momentarily* press the **F4** key again, or cycle power.



NOTES:

- If power is cycled when HOLD is active, any key presses (such as UNITS, DATUM, + or –) while in HOLD will be executed when power is restored.
- Leaving the normal measurement mode, (i.e. enter programming mode, SEND, or using the Go/No Go editor) causes the Readout to automatically exit HOLD.

Delete

Set Programming Parameter [Pr24](#) = 1 to enable this function.

Momentarily pressing **F2** sends a special “delete” signal to the output data port. When a ProRF Transmitter is attached to this port, a “delete” message will be sent to the ProRF Receiver.

This “delete” message can be configured to remove the last measurement from a cut list when connected to another device such as an automated stop or cutting system (the stop system’s software must support this ability).



Go/NoGo

Set Programming Parameter [Pr24](#) = 2 to enable this function.



In certain applications, it may be desirable to program upper and lower measurement tolerances to measure parts. If the measurement falls within the programmed tolerance, a “Go” condition occurs. If the measurement is not within the upper or lower tolerance, a “No Go” condition occurs.

Programming Parameter [Pr25](#) is used to configure this function.

F3 & F4 are used to edit the function parameters.

Programming the Go No/Go Function

The Readout can store up to 16 measurement points (set by [pr25](#)), each with its own upper and lower tolerance. Each measurement index is identified with a number from 1 to 16. The Go/NoGo Editor is used to enter individual upper and lower tolerances for each measurement point as follows:

1. Press **F3** to enter the Editor. The LCD will display **Go X** where x is a number from 1 to 16 representing the measurement point to be edited. (Pressing **F3** will increment through the list of points (Pr25), while pressing **F4** will decrement through the list). When the point to be programmed is reached go to Step 2.
2. *Press and Hold* the **UNITS** key and *Momentarily* press the **F4** key. The LCD will display **GoX U** for 1 second where **X** is the measurement point and **U** indicates the *upper tolerance* is to be programmed. Use the **+** and **-** keys to set an upper limit, go to Step 3
3. *Momentarily* press **F3**. The LCD will now display **GoX L** for 1 second where **X** is the measurement index and **L** indicates the *lower tolerance* is to be programmed. Use the **+** and **-** keys to set a lower limit, go to Step 4.
4. After the last point is reached, (determined by Pr25), pressing **F3** again will display **Go OFF** indicating that the Editor is off.

Operation of Go No/Go Function

To increment through the list of measurement points press **F3**.

To decrement through the list of measurement points press **F4**.

To display which measurement index is currently active, press and hold **F3** or **F4** for 3 seconds. The LCD will display **Go X** where **X** is the measurement index currently active. Once a measurement point is selected, the LCD will alternate between the current position and **Go** or **no Go** depending on the current position and programmed tolerances for that measurement point.

Measurement Accumulator

Set Programming Parameter **Pr24** = 1 to enable this function.

This Function allows multiple measurements to be made, and the sum displayed on the Readout.



PROGRAMMING PARAMETER Pr25 is used to configure this function.

F3 & F4 are used to execute this function.

1. Press the **F4** key to view any previous accumulator value.
The LCD will display **A c c u** for 1 second followed by the total accumulated measurements. The display format for the accumulated total is controlled by both the currently selected measurement mode (**UNITS** key) and the Programming Parameter **Pr25**.
 - a. If **Pr25** is set to 0, and the Readout is in inch mode, (decimal or fractions), the accumulated total is displayed in Decimal Inches.
 - b. If **Pr25** is set to 0, and the Readout is in metric mode, (mm or cm), the accumulated total is displayed in mm.
 - c. If **Pr25** is set to any non-zero value, and the Readout is in inch modes, (decimal or fractions), the accumulated total is displayed as feet and inches. (fff ii) where f=feet and i = inches
 - d. If **Pr25** is set to any non-zero value, and the Readout is in metric mode, (mm or cm), the accumulated total is displayed as meters and millimeters. (MM mmm) where M=meters and m=millimeters.
2. Press the **F3** key to clear the accumulator.
The LCD will display **C L r** for 1 second. The DRO will return to the normal measuring mode.
3. To add a measurement to the accumulator, make the measurement and then press the **F3** key. The LCD momentarily displays **Add** to indicate that the measurement has been added to the accumulated total. Continue to add measurements by pressing the **F3** key as each measurement is made.
4. To view the accumulated total, press the **F4** key.
The following options are now available:
 - a. Press **F3** to clear the total and return to the measuring mode.
 - b. Press **F4** (DOES NOT clear the total) to return to the measuring mode.
 - c. Press **SEND** to transmit the accumulated total to the output port.

NOTE: This Function maintains a running sum of the measurements taken. Individual measurements in a series cannot be edited or deleted. If an error is made and an incorrect measurement is taken, the entire summation must be cleared and repeated. No rounding of inches or millimeters occurs when configured for feet/inches or meters/millimeters.

Statistics

Set Programming Parameter [Pr24](#) = **4** to enable this function.

This Function can perform some basic statistical analysis without the use of SPC data collection on a PC or other device. The Statistics Function can provide the following information:



1. Measurement Count.
2. Minimum Measurement.
3. Maximum Measurement.
4. Average Measurement in two modes:
 - a. Standard average (Measurement Sum \div Count)
 - b. Trimmed average ((Measurement Sum - Max - Min) \div (Count - 2))

F3 & F4 are used to execute this function.

To begin the Statistics Function:

1. Clear the statistics variables by pressing the **F4** key.
If the variables are already clear, the LCD will display **CLr**.
If there are previous samples in memory, the LCD will display **Cn** representing the measurement count for 1 second followed by a non-zero number.
Press the **F3** key to clear the memory. The LCD will display **CLr** for 1 second and then return to normal measurement mode
2. Take a measurement and press the **F3** key. The LCD displays **Add x** momentarily to indicate that the measurement has been added and how many (**x**) have been accumulated so far. Continue to take additional measurements and press the **F3** key after each measurement.
3. Review the Data:
Press the **F4** key and the LCD will display **Cn** for 1 second followed by a non-zero number. This number represents the measurement **Count**.
Press the **F4** key again and the LCD will display **Lo** for 1 second followed by the **Minimum** Measured value.
Then you may:
 - a. Press **F3** to clear statistics variables and exit.
 - b. Press **F4** to continue without clearing the variables.
 - c. Press **SEND** to transmit the Minimum Measurement to the output port.
Press the **F4** key again and the LCD will display **Hi** for 1 second followed by the **Maximum** Measured value.
Then you may:
 - a. Press **F3** to clear statistics variables and exit.
 - b. Press **F4** to continue without clearing the variables.
 - c. Press **SEND** to transmit the Minimum Measurement to the output port.

Press the **F4** key again and the LCD will display either **AG** or **AAG** depending on the setting of the [PROGRAMMING PARAMETER Pr25](#).

Then you may:

- a. Press the **F3** key to clear statistics variables and exit.
- b. Press the **F4** key to continue without clearing the statistics variables.
- c. Press **SEND** key to transmit the Average Measurement to the output port.

If **Pr25** is set to **0**, the Standard Averaging method is used and the LCD displays **AG** for 1 second followed by the Standard Average: (Measurement Sum ÷ Count)

If **Pr25** is set to any **non-zero** value, the LCD displays **AAG** for 1 second followed by Trimmed Average ((Measurement Sum - Max - Min) ÷ (Count - 2))

Notes on the Statistics Function:

Standard averaging will be influenced by the Minimum and Maximum measurement values. If these values vary greatly from the measurement population, the average will not reflect a “centered” representation of the measurement population.

Trimmed averaging, in this implementation, subtracts the Min and Max values prior to the averaging calculation. This yields a more “centered” representation of the measurement population that will be closer to the median value of the measurement population.

Advanced Hardware Features

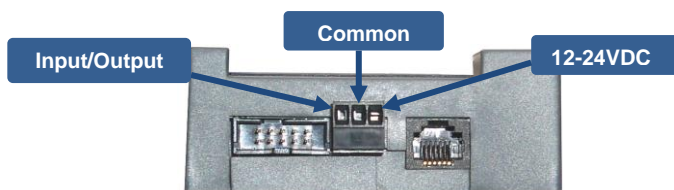
Input/Output Connections

An external connector and internal circuit board pads on the General Purpose Readout, and the on-board connector and circuit board pads on the In-Panel Readout provide:

- External Power connection points
- A solid-state Output Signal connection (0.1A / 30 VDC).
- [External Key Pad](#) Input connections

This Function is configured using [PROGRAMMING PARAMETER \(Pr38\)](#) & [PROGRAMMING PARAMETERS Pr35 & Pr36](#) and [CIRCUIT BOARD JUMPER JP5](#)

These INPUT and OUTPUT functions are mutually exclusive and cannot be enabled concurrently.



Output Signal Configuration

Set [JP5](#) on the readout circuit board to position **A**.

Set [PROGRAMMING PARAMETER \(Pr38\)](#) for the event that will trigger the output signal.

Value of Pr 38	Function
0	No Operation
1	Drift (Monitor) Operation
2	Limits
3	Go/NoGo

Output Signal Polarity

The polarity of the output signal is set using [PROGRAMMING PARAMETER \(Pr37\)](#).

The output is a transistor that conducts to Negative. The factory default is *normally open* (NO).

NOTES: The LCD will flash when any of the programmed conditions above are encountered, but the output signal only changes state once and then toggles back when an in-tolerance condition is restored.

When the Monitor mode is active AND the programmable output is enabled, the hardware output will not become active until the error condition has lasted at least 2 consecutive seconds.

CAUTION: The output signal remains active during Programming.

If parameters relating to the output are changed during Programming, the output signal could become active!

External Keypad Input

This Function allows external activation of two keys on the Advanced Key Pad.

[Pr35](#) maps a key to **IN1** (input 1) and [pr36](#) maps a key to **IN2** (input 2).

This function is configured using [PROGRAMMING PARAMETERS Pr35 & Pr36](#) and [CIRCUIT BOARD JUMPER JP5](#)



JUMPER JP5 on the Readout circuit board must be set to position **B** to enable external inputs.

The multi-purpose external connector on the General Purpose Readout provides a direct connection to **IN1** (only). This allows for easy external interfacing without modifying the case or soldering on the circuit board. There are three solder pads on the Readout’s circuit board, labeled **IN1**, **IN2** and **GND**. Any two of the Auxiliary keys may be mapped to respond to an external input by programming Pr35 and Pr36 using the Key Function Mapping Table below.

The inputs must be from a normally open “dry” (**no voltage applied**) switch, connected between ground (**GND** or common) and **IN1** and/or **IN2**. The switch input operates exactly the same as the mapped key providing both *Momentarily* and *Press and Hold* functionality.

CAUTION: DO NOT APPLY VOLTAGE TO THESE INPUTS.
These inputs should only be switched from OPEN to GROUND.

Value of Pr 35 & 36	Mapped to Key
1	On/Off
2	Units
3	Plus
4	Datum
5	Minus
6	ABS/INC
7	Send
8	F1
9	F2
10	F3
11	F4

Compensation Functions

Temperature Compensation

This Function provides automatic compensation of measurement variations caused by changes in the ambient temperature where the measurement system is used.

Additionally, special coefficients of expansion may be programmed and the resulting measurement compensated for the different expansion rates based on a temperature sensor inside the Readout.

Use this feature to maintain the highest measurement accuracy possible when using the system under wide temperature variations.

This function is configured using [PROGRAMMING PARAMETERS \(Pr41 through Pr44\)](#)

To activate Temperature Compensation:

1. Set [Pr41](#) to 1.
2. If necessary, adjust the expansion coefficient for the material that the system is affixed to using [Pr44](#).

Use care if changing this setting. It will affect system accuracy!

Note: Parameters **Pr41** & **44** are preset at the factory.

Non-Linear Compensation

This function is used to enhance the basic accuracy of the ProTable system by creating a table of correction values in the DRO based on known measurement points along the length of the measurement system.

For ProTable products, this feature has already been enabled and set-up at the factory and it is not necessary to repeat the initial error compensation procedure unless a measuring system component of the ProTable has been replaced.

Before beginning an error compensation calibration, you will need to determine how many points and at what interval to calibrate. **Refer to the Correction Chart supplied with your ProTable.** The DRO has a maximum number of 126 correction points. The smaller the compensation interval (more points) the smoother the calibration curve will be. Measurement standards such as Gage Blocks in lengths from .50 inch to 10.0 inches should be used. Keep in mind however, that you will need a sufficient number and selection of standards to create the number of points you decide to correct. For example: For a measuring system 100 inches long the smallest interval that can be corrected is .8 inches, $(100 \div 126)$. This also means you will need sufficient standards to create a known measurement point EVERY .8 inches. A more realistic approach would be to use an interval of two or more inches and calibrate fewer points.

The following example uses 5 inch (interval) measurement standards for a ProTable calibration.

1. Set **Pr39** (Compensation Enable) to 1
2. Set **Pr40** (Compensation Interval) to the length of the measurement standards multiple that will be used during the calibration, i.e. 5.00"
3. Turn the Digital Readout off. Press and hold down the **DATUM** key and the **ON/OFF** key for approximately 10 seconds. After that time, the LCD will turn on and complete a segment test. You can release the **ON/OFF** and **DATUM** keys at this time.
4. After the LCD test is complete, the Readout will show the firmware version for about 1 second. This will be followed by the LCD showing the current position alternating with **cal** . This indicates the Digital Readout is in the calibration mode. This alternating display will continue throughout the calibration process.
5. Place the moving jaw of the ProTable against the fixed jaw. Press **DATUM** to zero the Readout.

-
3. Press the **F1** key. This enters the first correction point into the table. The LCD will momentarily show **C o 0** indicating that the entry was accepted.
 4. Open the carriage and place the first measurement standard (5") against the fixed jaw. Close the moving jaw until the face of the jaw gently touches the measurement standard. Press the **F1** key. The LCD will show **C o 1** indicating the first measurement standard has been digitized.
 5. Open the jaws and insert another measurement standard (5"). Close the moving jaw until the face of the jaw gently touches the measurement standard. Press **F1**. The LCD will show **C o 2** briefly. Continue this step with additional standards placed end to end every 5" until the maximum measuring range has been achieved.
 6. After the last standard distance has been digitized, press the **F2** key. The LCD will momentarily show **C o E** indicating that the calibration process has ended.

During the calibration process outlined above, the operator may wish to verify the correction point that is to be programmed next. i.e. the next **C o X**. This can be accomplished by momentarily pressing the **F3** key. The LCD will display **CP X**, where **X** is the next correction point number to be programmed.

NOTE: If an error is made during the calibration process where an incorrect table entry is recorded, the entire process must be repeated starting at step 3 above.

Operating the system in compensated mode.

After a successful correction table has been programmed, the DRO will operate normally and the measuring system will have a higher level of accuracy. If the Moving Jaw is positioned outside the calibrated range of operation, the LCD will display **NoCo** alternately with the current position. This indicates that the system is operating outside the calibrated measuring range and has a reduced measuring accuracy.

If you choose to turn off Non-Linear Compensation ([Pr39=0](#)), the compensation table will be saved in memory. Changing [Pr39](#) to 1 will re-enable the previously stored compensation table.

Note: Re-setting the Digital Readout to factory settings does not erase the compensation table.

IMPORTANT NOTE about ENHANCED ACCURACY COMPENSATION

The factory supplied Calibration Chart plots measurement points **between** the compensation points. This method statistically provides the worst case error that exists will be charted.

For example: If the calibration interval, as described above, is 5 inches, the plotted points will include points at 2.5", 7.5", 12.5" ...etc.

SECTION 4

READOUT PROGRAMMING

Many functions of these Digital Readouts are user programmable and may need to be configured for different applications.

Key Timing

Several keys on the Readouts have multiple functions. The function that is executed when a key is depressed is dependent on how long the key is depressed. Therefore, how long the key is depressed is important. This manual uses the term “*Momentarily*” to describe a key depression of less than .8 seconds, and “*Press and Hold*” to describe a key depression of longer than 1 second.

	<i>Momentarily</i>	<i>Press & Hold</i>
How long a key is pressed?	Less than .8 seconds	More than 1 second
When is the key function executed?	On key release	While holding

For Momentary key operations, the Key Function is executed on release. For Press & Hold operations, the Key Function is executed after the key has been depressed for the prescribed amount of time.

Resetting All Parameters

To reset all programming parameters to their Factory Default settings:

1. Turn the Readout power off.
2. *Press and Hold* the **ON/OFF** and **UNITS** keys for 10 seconds.

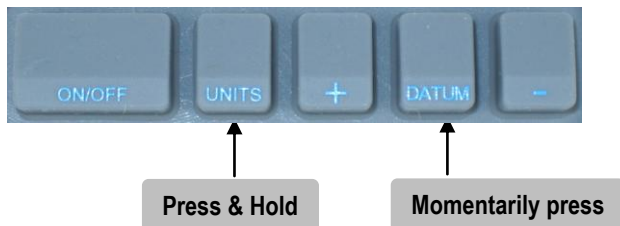


The Readout will:

1. Perform a full segment LCD test
2. Display the current firmware version
3. **Reset all programming parameters to factory default values.**
(not recommended unless instructed by factory technician)

Enter Programming Mode

Press and Hold the **UNITS** key while *Momentarily* pressing the **DATUM** key. The LCD will briefly display: **P G on** (Programming On). Release both keys. The LCD will then display **Pr 1**, (indicating Programming Parameter #1) for about 1 second, then display the value stored for **Pr1**.



[Video demonstration](#)

Navigating Programming Mode:

To move up Parameter list:

Momentarily press the **UNITS** key to advance up through the Programming Parameter list. The Readout will display the Parameter number, then the current programmed value.



To move down Parameter list:

Press and Hold the **ON/OFF** key and *Momentarily* press the **UNITS** key to move backward through the Parameter list.



To Increase a Parameter value:

Momentarily press the **plus (+)** key while the Parameter value is displayed.



To Decrease Parameter value:

Momentarily press the **minus (-)** key while the Parameter value is displayed.



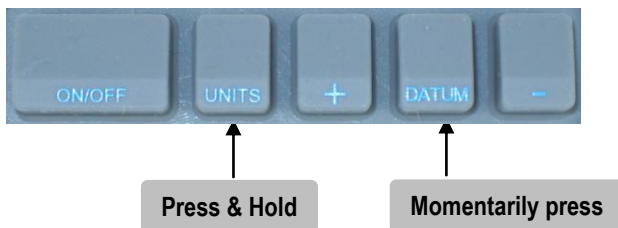
To Reset a Parameter value to the Factory Default setting:

Momentarily press the **DATUM** key while the Parameter value is displayed.



Exit Programming Mode

1. *Press and Hold* the **UNITS** key until the Readout displays **Pr x**
2. *Momentarily* press the **DATUM** key. The LCD will display **PG off**
3. Release both keys. The Readout will return to normal operation.



[Video demonstration](#)

NOTE: The Readout will automatically exit programming mode after 60 seconds without key activity.

Programming Parameters

Programming Parameter Values in brackets [] represent the range of possible values available for that Parameter.

The Factory **Default Value** for each parameter is shown in **Red**.

Pr1 – Datum Key [0 to ± 999.999in] or [0 to ± 9999.99mm]

The value that will be recalled (on the display) when the **DATUM** key is pressed during normal operation. This value would normally be set to 0.00, but may be set to any value the readout is capable of displaying.

Default Value= 0.00

Pr2 – Direction of Travel [0 or 1]

This parameter controls the direction (positive vs. negative) displayed on the readout when the measuring system is moved.

Pr3 – Key Lockout [0 or 1]

This parameter controls the operation of the **+**, **-** and **DATUM** keys.

Default Value = 0

Pr 3 Setting	Key Action
0	+, - and Datum keys respond normally
1	+, - and Datum keys are locked

Pr4 – Display Resolution [1, 2, 3 or 4]

This parameter sets the number of places to the right of the decimal point displayed on the Readout. When the Readout is in a decimal mode (in, mm or cm), it will auto-range to the next lower resolution if the value is too large to be displayed in the current setting but is displayable in a lower resolution.

Default Value = 3

Pr 4 Setting	Display Resolution
1	X.X
2	X.XX
3	X.XXX
4	X.XXXX

NOTES:

- Decimal inches have a maximum of 3 decimal places (4 places ± .0005).
- Millimeters have a maximum of 2 decimal places
- This option has no effect when displaying fractions.

Pr5 – Movement to Wake Readout [0.3 to 10mm]

This parameter sets the amount of encoder, (or system), movement required to automatically wake up the Readout when it is turned off or in sleep mode.

Default Value = 0.1mm

Pr6-10 – NOT USED on ProTable-TUBE

Pr11 – Displayed Measurement Units [0 to 6]

This parameter controls the type of measuring units the Readout displays when the **UNITS** key is pressed. The table below illustrates the possible combinations of measuring units that will be displayed by changing this parameter.

Default = 0, Factory pre-set to 2

Pr 11 Setting	Displayable Units
0	All inch units and millimeters
1	Millimeters only
2	Decimal inches and millimeters
3	Decimal inches and centimeters
4	All inch units and centimeters
5	Centimeters only
6	Decimal inches only

Pr12 – Display Auto-Off Time [0 to 240]

This parameter changes the amount of time before the display turns off to conserve battery power. The value is the number of minutes of idle operation (no movement or key presses) before the display turns off. When this parameter is enabled ($\neq 0$), pressing the **ON/OFF** key or movement of the encoder or system will wake up the Readout.

A value of '0' disables the Auto Off feature (the Readout is always on).

Default Value = 15 (minutes)

Pr13 – Linear Compensation [0.00001 to 9.99999]

This parameter invokes a linear multiplier correction in the Readout that is applied to the actual measurement prior to any offsets. This adjusted measurement is then displayed on the Readout. This is useful, for instance, if you would like to display half, double, or other values that can be achieved by multiplying the actual measurement by the value of the parameter setting.

See Front Inside cover, page 2, for THIS ProTable.

Pr 14 – ProScale Compatibility [0 or 1]

Preset at factory for compatibility with ProTable Measurement Systems.

ProTable = 0

Pr15-21 – NOT USED

Pr22 – ABS/INC Key Operation [0 or 1]

This parameter controls the amount of time the **ABS/INC** key needs to be pressed to enter the **INC**remental measuring mode.

Default Value = 0

Pr 22 Setting	Key press to enter INC remental mode
0	<i>Press and Hold</i> ABS/INC key (1.2 sec)
1	<i>Momentary depress</i> ABS/INC key (< 1 sec)

Pr23 – Auxiliary Keypad Enable [0 to 3]

The parameter controls the operation of the **ABS/INC** and **SEND** keys.

Default Value = 3

Pr 23 Setting	ABS/INC and SEND keys
0	Disable Both Keys
1	Enable abs/inc Key only
2	Enable send Key only
3	Enable Both Keys

Pr24 – Special Functions [0 to 4]

This parameter controls which [Advanced Programming Function](#) is active

Default Value = 0

Pr24 Setting	Advanced Readout Function
0	None
1	F3 = MON, F4 = HOLD, F2 = Delete
2	Go/NoGo
3	Measurement Accumulation
4	Statistics

Pr25 – Special Function Variable [0 to 16]

The parameter may be used by a special function to customize it's operation. See [Advanced Programming Function](#) for instances when this parameter is used.

Default Value = 0

Pr26 – Drift Monitor Tolerance [.01 mm to 3048 mm] or [.001 in to 120 in]

This parameter sets the amount of drift that must occur in [MONitor](#) mode to trigger a drift indication.

Default Value = .01 in

Pr27 – Upper/Lower Limits [0 or 1]

This parameter Enables/Disables the use of the [Upper/Lower Limits](#) Function.
(Set Pr 28 to the lower limit & Pr 29 to the upper limit).

Default Value = 0

Pr 27 Setting	Upper/Lower Limits Function
0	Function DISABLED
1	Function ACTIVE

Pr28 – Lower Limit [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value sets the lower limit of Upper/Lower Limits function when Pr27 = 1.

Default Value = 0.000

Pr29 – Upper Limit [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value sets the upper limit of Upper/Lower Limits function when Pr27 = 1.

Default Value = 5.000 in. (127.00mm)

Pr30 – Offset Addition [0 to 4]

This parameter Enables/Disables the use of the [Offset Addition](#) function.

Pr31, Pr32, Pr33, and Pr34 set the value of the offsets to be added.

Default Value = 0

Pr30 Setting	Offsets Enabled
0	None
1	Offset 1 Enabled
2	Offsets 1 & 2 Enabled
3	Offsets 1, 2 & 3 Enabled
4	Offsets 1, 2, 3 & 4 Enabled

Pr31 – Offset 1 [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value is added to the current measurement (or position) when:

Pr 30 ≠ 0, and **1** is displayed in the upper left area of the LCD.

Default Value = .500 in. (12.7mm)

Pr32 – Offset 2 [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value is added to the current measurement (or position) when:

Pr 30 ≠ 0, and **2** is displayed in the upper left area of the LCD.

Default Value = 2 in. (50.8mm)

Pr33 – Offset 3 [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value is added to the current measurement (or position) when:

Pr 30 ≠ 0, and **3** is displayed in the upper left area of the LCD.

Default Value = 3 in. (76.2mm)

Pr34 – Offset 4 [0 to ± 999.999in] or [0 to ± 9999.99mm]

This value is added to the current measurement (or position) when:

Pr 30 ≠ 0, and **4** is displayed in the upper left area of the LCD.

Default Value = 3 in. (76.2mm)

Pr35 – External Key Input 1 [0 to 11]

This parameter maps the Auxiliary Key to be [activated externally](#).

Default Value = 0

Pr36 – External Key Input 2 [0 to 11]

This parameter maps the Auxiliary Key to be [activated externally](#).

Default Value = 0

Value of Pr 35 & 36	Key
0	None
1	On/Off
2	Units
3	Plus
4	Datum
5	Minus
6	ABS/INC
7	Send
8	F1
9	F2
10	F3
11	F4

Pr37 – Programmable Output Polarity [0 or 1]

This sets the normal state of the [programmable output](#) when **not** activated and [Circuit board jumper](#) JP5 is in position **A**.

Default Value = 0

Pr 37 Setting	Output Polarity
0	Normally Open (NO)
1	Normally Closed (NC)

Pr38 – Programmable Output Function [0 to 3]

Selects the function that the [programmable output](#) activates on when [Circuit board jumper](#) JP5 is in position **A**.

Default Value = 0

Value of Pr 38	Function
0	No Operation
1	Monitor (Drift) Operation
2	Upper/Lower Limits
3	Go/No Go

SEE PG 2 FOR SETTINGS APPLICABLE TO THIS PROTABLE SYSTEM.

Pr39 – Non-Linear Compensation [0 or 1]

This parameter Enables/Disables the [Non-Linear Compensation](#) function.

Pr 39 Setting	Non-Linear Compensation
0	Off
1	On

Pr40 – Non-Linear Compensation Interval [0.5 to 10.0 in.]

This parameter sets the distance interval used while performing non-linear compensation calibration.

Pr41 – Temperature Compensation [0 or 1]

This parameter enables (disables) the [temperature compensation](#) feature.

Pr 41 Setting	Temperature Compensation
0	Off
1	On

Pr 42 & 43 – NOT USED

Pr44 – Temperature Compensation Coefficient [10 to 999]

This parameter sets the temperature expansion coefficient used when temperature compensation Pr41 = 1.

Frequently Asked Questions

What does **no Enc** mean?

If the Encoder is off the Scale, or the Encoder cable is unplugged from the Readout, **no Enc** will appear on the LCD. To clear:

1. Be sure the Encoder is on the Scale.
2. Unplug the Encoder from the Readout for 3 seconds.
3. Connect the Encoder to the Readout.

What does **b FAIL** mean?

When the readout displays this message it means the battery voltage has dropped to a level where reliable operation is no longer possible.

[Install a new battery](#) to clear this message.

What does **P FAIL** mean?

When the readout displays this message it means the battery voltage has dropped to a level where reliable programming is not possible.

[Install a new battery](#) to clear this message.

The Readout does not change, or changes very little, as carriage moves.

1. The Readout is in the [HOLD](#) mode.
2. The Linear scaling is set very low.
3. The guide clip is not engaged to the encoder properly.

The Readout alternately shows “no Co”.

The readout has [non-linear compensation](#) enabled and either:

1. The position of the encoder is outside the calibrated range
Move the encoder to a position within the calibrated range
2. The system datum has changed.
Make sure the system [datum](#) is set properly.
3. The Readout is in [INC](#) mode.
Return to [ABS](#) mode and check Datum.

Data Acquisition Accessories

ProRF SPC

ProRF allows measurement data to be transmitted wirelessly to a PC. The system uses 802.15.4 radio modules to provide reliable two way communication. The transmitter plugs into the SPC data output connector on the ProTable Readout.



ProRF Encoder

This Transmitter can be located on the moving carriage next to the readout. It transmits to a receiver as the carriage moves. The receiver is then connected to a computer at a remote location.



Thank you for choosing ProTable

IT WAS PROUDLY MADE IN THE USA



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