Accurate
TECHNOLOGY INC.
Linear Digital Measuring Systems

ProPanel HD E

SERIAL #

OPERATION

WARRANTY

Accurate Technology, Inc. warrants the ProScale 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.

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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.

PRE-CONFIGURED PARAMETERS FOR THIS PROPANEL

SERIAL #	_____
PARAMETER 2 (Reading Direction)	**1**
PARAMETER 11 (Displayed Units)	**2**
PARAMETER 13 (Linear Multiplier)	_____
PARAMETER 14 (ProScale Technology)	**0**
PARAMETER 30 (Offset Addition Enable)	**1**
PARAMETER 31 (Offset Addition 1)	_____
PARAMETER 32 (Offset Addition 2)	_____
PARAMETER 33 (Offset Addition 3)	_____
PARAMETER 39 (Non-Linear Compensation)	**1**
PARAMETER 41 (Temperature Comp. Enable)	**1**

Table of Contents

SECTION 1 GENERAL INFORMATION

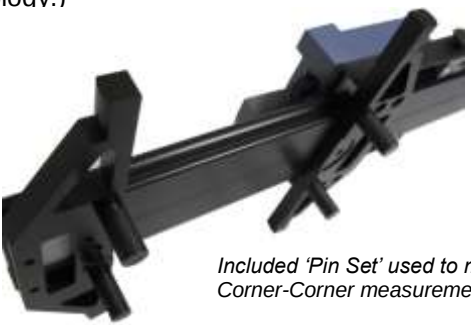
Introduction

This manual includes operation and programming information for ProPanel-HD E systems using a ProScale GP E General Purpose Enhanced Readout with operating firmware (F/W) of 3.1xxC and higher.
(The Firmware version is displayed on power-up, i.e. P3.100C)

NOTE: Some pictures used in this manual may not represent your actual product colors. The terms ProPanel, ProPanel HD and ProPanel HD E used in this manual refer to the current ProPanel HD E systems as well as previous ProPanel HD models discontinued effective Jan. 2013.

ProPanel™ is a general purpose portable measuring tool. It is ideal for making inside, outside and corner-corner dimensional measurements up to 100 inches (2.5m). In addition, hole-edge and hole-hole measurements are possible with the optional 3 piece Cone Set.
ProPanel-HD E has been designed using high quality extruded aluminum and machined parts to provide the best accuracy and repeatability.

The measurement system used for ProPanel-HD E is a ProScale® Model 590 Digital Measuring System. (Earlier ProPanel models used ProScale Model 580 technology.)



Included 'Pin Set' used to make Corner-Corner measurements

Optional 'Cone Set' used to make Hole-Hole and Hole-Edge measurements

Specifications[1]

Measuring Range:	ProPanel-HD E 60:	Up to 60 Inches (1.5m)		
	ProPanel-HD E 100:	Up to 100 Inches (2.5m)		
Accuracy:[2]	ProPanel-HD E:	± .005in (±.13mm)*		
	*(when operated in compensated mode)			
Resolution	.1inch	.1mm	.1cm	or
	.01inch	.01mm	.01cm	or
	.001inch	.01mm	.001cm	or
	.0005inch	.01mm	.001cm	or
	1/16inch	1/32inch	1/64 inch	
Repeatability	.001in or .01mm or .001cm			
Display Range:	± 999.999 in; ± 399 63/64 in			
	± 9999.99 mm; ± 999.999 cm			
Operating Temp:	32 to 120°F 0 to 51°C			
Max. Slew Rate:	100 inches/sec. (1500mm/sec)			
Power:	1 CR123 3V Lithium battery (or equivalent)			
Output Format:	Mitutoyo Digimatic® SPC			

[1]Specifications based on ProPanel-HD E used with a General Purpose Enhanced LCD Readout pictured here.

[2] Maximum observed error over the entire measuring range.

SECTION 2 PROPANEL OPERATION

Initial Set-up

In most instances the initial parameters such as a reference point, measurement units and resolution will be factory set for your ProPanel System. SEE PAGE 2.

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 +, - and (optionally) DATUM Key.
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 measurement system is moved is programmed using Programming Parameter Pr2.
Resolution: The resolution of the displayed units is programmed using Programming Parameter Pr4.

Calibration

The accuracy of the ProPanel-HD E system is dependent on the manufacturing of the ProScale Measuring System. There are no calibration adjustments available or necessary.
The Readout has a programmable scaling factor that allows correction for slight linear inaccuracies. This scaling factor has been pre-set for THIS ProPanel at the time of manufacturing. SEE PAGE 2.
Also Refer to Section 3: linear scaling

Zeroing the ProPanel-HD E is as simple as closing the two jaws and pressing the **DATUM** key**.** Once done, lock the display if desired. This prevents accidental re-zeroing or setting of any offsets into the Readout. For additional information, refer to Section 3: DATUM KEY and KEY LOCK

Outside Measuring:

Using the ProPanel-HD E like a hand held caliper or T-square, close the jaws against the edge(s) of the item being measured, keeping the jaws as square to the edges as possible, and read the result on the Readout.
Note: Whenever possible, use the full width of the jaw for measurements. This ensures the most consistent and accurate measurements.

Inside Measuring

1. Close the jaws and push the DATUM key.
2. Depress the **F1** key until the number **1** is displayed in the upper portion of the LCD.
3. The readout will display the Inside measurement. Offset Addition 1, ***Programming Parameter Pr31***, is factory programmed. See Page 3 of this manual.

Using the upper or lower tips of the ProPanel jaws, measure the inside dimension of interest and read the result on the Readout.

Making an inside measurement.
Shown with optional SPC wirelss transmitter.

Hole-to-Hole Measurements

Use the (OPTIONAL) Measurement Cone Set to make Hole-to-Hole or Hole-to-Edge measurements.

Hole-to-Hole

1. Close the jaws together and momentarily push the DATUM key. The readout should show 0.000 inches.
2. Install both full cones as shown.
3. Press the F1 key until the #2 superscript appears.
4. Note that the tips of the cones are even with the edges of the jaws, so the value displayed is correct. NOTE: No hole-to-hole measurements less than 1.5” can be made.
5. Open the jaws and place the cones into the holes on your part. A slight “wiggling” of the ProPanel will ensure the cones self-center into the holes.
6. Read the Hole-to-Hole distance on the Readout.
7. If you need to recalibrate with the cones installed:
    a. Press the DATUM key to clear the readout.
    b. Close the moving jaw so the cones touch.
    c. Press the F1 key until the #2 superscript appears.
    d. The reading should equal 1.500 inches.

Hole-to-Edge

1. Close the jaws and push the DATUM key.
2. Install a full cone on the moving jaw and the half cone on the fixed jaw. For the most accurate measurements, be sure the flat edge of the half cone is installed co-planer to the flat edge of the measurement jaw.
3. Press the F1 key until the #2 superscript appears.
4. Note that the tips of the cones are even with the edges of the jaws, so the value displayed is correct. NOTE: No edge-to-hole measurements less than 0.75” can be made.
5. Open the jaws and place the fixed jaw with the flat cone against the edge of the unit under test, and the moving jaw with the full cone into the hole. Be careful to keep the flat cone square against the edge and the full cone centered in the hole.
6. Read the Hole-to-Edge distance on the Readout.
7. If you need to recalibrate with the cones installed:
    a. Press the DATUM key to clear the readout.
    b. Close the moving jaw so the cones touch.
    c. Press the F1 key until the #3 superscript appears.
    d. The reading should equal 0.750 inches.

General Maintenance

ProPanel-HD E will operate in a dry environment with non-conductive debris such as sawdust, plastic, dust, and small amounts of water splash with no adverse effects. The system should be cleaned of excess debris when necessary to prevent premature damage to the Scale or Encoder.
The Digital Readout should be cleaned periodically with compressed air to remove any dust on the lens and keys.

All mounting fasteners should be checked occasionally for tightness.
Occasionally check parallelism of the jaws by measuring a piece of paper between the upper tips of the jaws, then between the lower tips of the jaws. A variation of 0.05mm (0.002 inches) is within specifications.
If the jaw becomes difficult to move, and the lock/thumbscrew is not tightened, verify the scale is clean. Find and remove any burrs which may have developed on the aluminum scale.
Do not use any liquid lubricants on the ProPanel-HD E system.

Recalibration or Repairs may be arranged with Accurate Technology by completing the Return Material Authorization forms located at proscale.com>Customer Support>Repair Request.

Battery Replacement

When the Standard Readout battery needs to be replaced, a low battery indicator will appear in the lower left corner of the LCD. Press and hold the **DATUM** key for 6 seconds to display the current battery voltage.
When battery voltage drops below 2.6v, the Readout will turn itself off until the battery is replaced.

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

SECTION 3 READOUT OPERATION

All of the available functions of the ProPanel-HD E Readout are included in this section. The operations & functions that **DO NOT** apply to ProPanel-HD and ProPanel-HD E are shown Grayed Out. If a different Readout is used on your ProPanel system, refer to the Operation Manual for that readout.

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.

	Momentarily	***Press & Hold***
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 the Function is executed when the key is released.

For *Press & Hold* operations the Function is executed after the key has been depressed for the prescribed amount of time.

See a video demonstration of key timing HERE.

See the chart below for a summary of the functions performed by the Readout keys pictured below.:

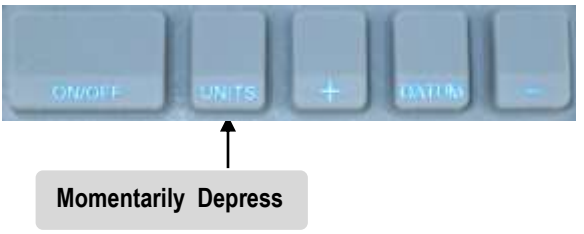
	Momentarily	***Press & Hold***
On/Off Key	Turns Readout power On or Off	No effect
Units Key	Cycles through measurement units: inches, fractions, mm	No effect
Plus (+) Key	Increments displayed value	Increments faster
Datum Key	Forces displayed reading to programmed Datum value	After 6 seconds displays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

Keys

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

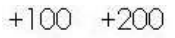


Momentarily depressing the **UNITS** key will display measurement/position information in inches, fractions or millimeters (or centimeters). With each key press, the readout will cycle through decimal inches, fractions (16ths, 32nds, 64ths) and millimeters (or centimeters). To set the measurement modes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

Fractional Inch mode is disabled on ProPanel-HD Systems

When the Readout is in 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).***

Fundamental Readout Functions

Auto on/off

To prolong battery life, the Readout has a built-in function that turns off the Readout 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.
Press the **ON/OFF** key or move the ProPanel-HD E 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.
THIS PARAMETER HAS BEEN FACTORY SET FOR PROPANEL-HD

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

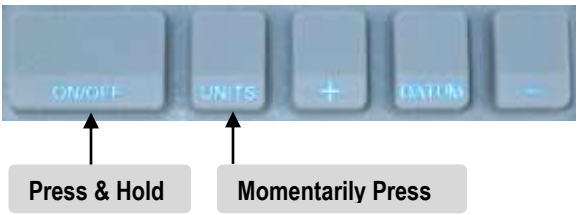
The measurement units displayed on the Readout are user configurable. The table below provides a matrix for selecting the measurement units that may be displayed when pressing the **UNITS** key.
Use ***Programming Parameter (Pr11)*** to set this value.

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. This method allows a more permanent Key Lock since programming can be disabled with a hardware jumper inside the Readout.
*See **Programming Parameter (Pr3)** to enable this function.*

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.*
THIS PARAMETER HAS BEEN FACTORY SET FOR PROPANEL-HD

Upper/Lower Limits

The standard ProPanel-HD Readout can display either **LL**, for Lower Limit, or **UL**, for Upper Limit, if a user 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 display toggles for 2 seconds between the current measurement 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)** for additional information.*

An output signal may be configured to activate when either the Upper or Lower limit is exceeded.
SEE PROGRAMMABLE OUTPUT OPERATION.

Advanced Readout Functions

Absolute / Incremental

The ProPanel-HD E 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 on the Readout referenced to a fixed or known position – Jaws Closed for example. 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)

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 measurements are related to the current system reference point-– Jaws Closed for example.
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)
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 moving jaw. This is typically a position of zero (0.00, Jaws closed) but may be changed by using the **+** or **–** Key to enter an offset. Moving the Encoder 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

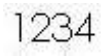
The ProPanel-HD E Readout has an output port that may be used to send measurement information to another device (i.e. a PC) via a wireless transmitter.
See Section 5: *Accessories*
After connecting a transmitter to the 10 pin output connector on the Readout, the user may initiate the data transmission 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 measurement 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 Programming Functions*). In those modes, the displayed (or calculated) values are sent, NOT the current jaw 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 5: *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 to inside measurements or from one reference point to another.
See PROGRAMMING PARAMETERS (Pr30, 31, 32, 33 & 34)

The ProPanel-HD 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.
PARAMETERS Pr30 & Pr31 HAVE BEEN FACTORY SET FOR THIS PROPANEL-HD SYSTEM.

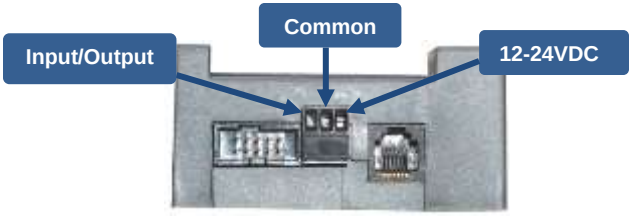
Input/Output Connections

An external connector on the ProPanel-HD E Readout provides:

- External Power connection points
- A solid-state Output Signal connection (0.1A / 30 VDC).
- Auxiliary 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.



External Power

NOT USED FOR PROPANEL OPERATION

Output Signal

Set **JP5** on the readout circuit board to position **A.**

Set ***PROGRAMMING PARAMETER (Pr38)*** for the event that will trigger the output .

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

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.

CAUTION: **The output signal remains active during Programming.**
If parameters relating to the output are changed during Programming, the output signal could become active!

Auxiliary Keypad Input

NOT USED WITH PROPANEL SYSTEMS.

Advanced Programming Functions

Advanced Programming Functions allow the ProPanel-HD E 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.

Set Programming Parameter ***pr24*** = **1** to enable this function.

Monitor

The ProPanel-HD 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.
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.
NOT TYPICALLY USED WITH PROPANEL-HD SYSTEMS.

Hold

The Readout provides a feature that allows the displayed measurement to be "frozen" in time while the Jaw is moved from its current position. This allows measurements to be captured on the Readout and held for later viewing regardless of the current Jaw position. To activate the Hold Mode, momentarily press the **F4** key. **HOLD** will be displayed in the upper left corner of the LCD. The currently displayed measurement and selected key presses will be frozen at this point. To release the HOLD feature, momentarily press the **F4** key again, or cycle power.

NOTES:

- **If power is cycled when Hold Mode is active, any key (such as UNITS, DATUM, + or –) that was depressed while in Hold Mode 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

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 removes the last measurement from a cut list when connected to another device such as an automated stop or cutting system.

Go/NoGo

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.

Set Programming Parameter ***pr24*** = **2** to enable this function.
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

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

SET PROGRAMMING PARAMETER pr24 = **3** to enable this function.
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 **Accu** 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 **CLr** 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

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 ÷ Count)
   b. Trimmed average ((Measurement Sum - Max - Min) ÷ (Count - 2))

Set Programming Parameter ***pr24*** = **4** to enable this function.
F3 & F4 are used to execute this function.

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.

Lack of memory resources limits this Function to Averaging. Only a running summation is kept in memory, not the value of each measurement sample. Because of this, we cannot calculate the statistical values of median or standard deviation. On the other hand, this implementation allows for a large number of measurement samples to be accumulated. Measurement count can be up to 65,536 samples. Measurement summation can be 9.223×10^{14} mm.

Compensation

Applied to ProPanel-HD E Systems ONLY
The firmware version is displayed on power-up, ie P3.1xxC.

Temperature Compensation

This Function provides automatic compensation of measurement variations caused by changes in the ambient temperature where the measurement system is used.
Additionally, coefficients of expansion other than aluminum 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 ProPanel-HD under wide temperature variations.

This function is configured using ***PROGRAMMING PARAMETERS (Pr41 & Pr44)***

To activate Temperature Compensation:

1. Set ***pr41*** to **1**.
2. If necessary, enter the expansion coefficient for the material that the ProScale aluminum Scale is affixed to with ***pr44***.
   Use care if changing this setting. It will affect system accuracy!

Note: Parameters ***Pr41***, & ***44*** are preset at the factory for **ProPanel-HDE**

Non-linear Compensation

The Non-Linear Compensation Function is used to enhance the basic accuracy of the ProPanel-HD E system by creating a table of correction values in the Readout, based on known measurement points along the length of the system. The compensation table consists of up to 126 elements or points.

This function is enabled by setting ***PROGRAMMING PARAMETERS (Pr39)*** **= 1**
This function is configured using ***PROGRAMMING PARAMETERS (Pr40)*** and the **F1** & **F2** Keys

ProPanel HD-E systems are enabled and configured at the factory. It is not necessary to repeat the error compensation procedure unless a system component has been replaced (Readout, Encoder or Scale).

Before beginning a Non-Linear error compensation, you will need to determine how many points and at what interval to compensate. The Readout has a maximum of 126 correction points. The smaller the compensation interval (more points) the smoother the corrected 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.
Example: For a measuring system 100 inches long, the smallest interval that can be corrected is .8 inches, (100 ÷ 126). This means you will need sufficient standards to create a known measurement correction point EVERY .8 inches. A more realistic approach would be to use an interval of two or more inches and calibrate fewer points.

It is IMPORTANT that the placement of the measurement standard(s) during calibration be repeatable and that it is a useable point to make measurements at during normal operation. This becomes even more critical as the surface area used for normal measurements increases beyond the size (area) at which the corrections are made.

The following example uses 5 inch (interval) measurement standards

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, in this example **5.000** inches.
3. Turn the Readout off.
4. *Press and Hold* 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.
5. 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 Readout is in the correction table calibration mode. This alternating display will continue throughout the calibration process.
6. Close the ProPanel HD E jaws. Press **DATUM** to zero the Readout.
7. Press the **F1** key. This enters the first correction point into the table. The LCD will momentarily show **Co 0** indicating that the entry was accepted.
8. Open the jaw and place the first measurement standard (5.000in.) between the jaws and under the center of the scale. Close the moving jaw until the face of the jaw gently touches the measurement standard. Press the **F1** key. The LCD will show **Co 1** indicating the first measurement point has been digitized.
9. Open the jaws and insert another measurement standard (10.000in). Close the moving jaw until the face of the jaw gently touches the measurement standard. Press **F1**. The LCD will show **Co 2** briefly. Continue this step with additional standards placed end to end every 5.000” until the maximum measuring range has been achieved.
10. After the last correction point has been digitized, press the **F2** key. The LCD will momentarily show **CoE** indicating that the calibration process has ended.

During the calibration process, the user may wish to verify the correction point that is to be programmed next. 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. This feature is helpful after programming many correction points since it can be easy to lose track of the number of standards programmed.

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

Operating in Compensated mode.

After a successful correction table has been programmed, the Readout will operate normally and the ProPanel-HD E system will have a higher level of accuracy.

NOTE: If the encoder is positioned outside the calibrated (corrected) range of operation, the LCD will display **No Co** alternately with the current position. This is normal and 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. Thereafter, changing ***Pr39*** to **1** will re-enable the previously stored compensation table.

NOTE: Resetting the Readout to factory default settings does not erase the compensation table.

Circuit Board Jumpers

JP1 **FACTORY USE ONLY**

JP2 **FACTORY USE ONLY** **Position A ONLY**

JP3 **Programming Lock-out** **Default = Position A**

Readout programming can be enabled or disabled though the use of this circuit board jumper.

Programming is enabled when the shorting jumper is installed in position **A**. To disable Readout Programming, install jumper on position B.

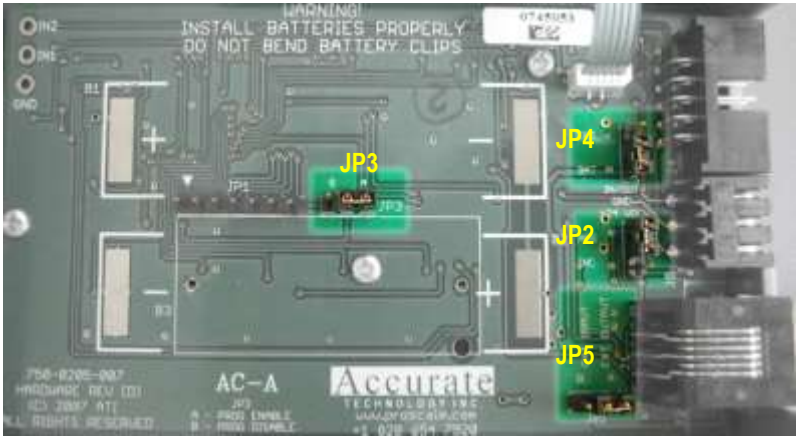
When programming is disabled, user cannot access the programming functions via the front panel readout keys as described in the Section 4: PROGRAMMING PARAMETERS. This provides a method of configuring the ProPanel-HD with specific parameters, and preventing unauthorized or accidental changes.

JP4 **Power Selection** **Default = Position B**

The ProPanel-HD E was designed to operate on Battery power only. DO NOT REPOSITION THIS JUMPER from the factory default.

JP5 **Input/Output Selection** **Default = Position A**

The ProPanel-HD E was not designed for external inputs. DO NOT REPOSITION THIS JUMPER from the factory default.



SECTION 4 PROGRAMMING

Several functions of the ProPanel-HD E (and older ProPanel HD) are user programmable. The following describes what features and functions are available and how to change the factory defaults to customize your ProPanel

Key Timing

Several keys on the Readout 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.

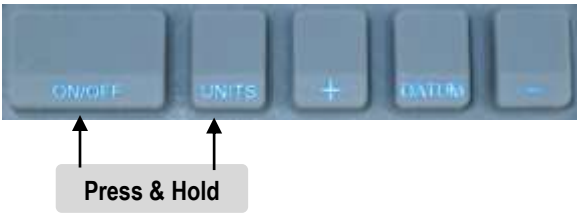
	Momentarily	***Press & Hold***
How long a key is pressed?	Less than .8 seconds	More than 1 second
When is the key function executed?	On key release	While holding

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.

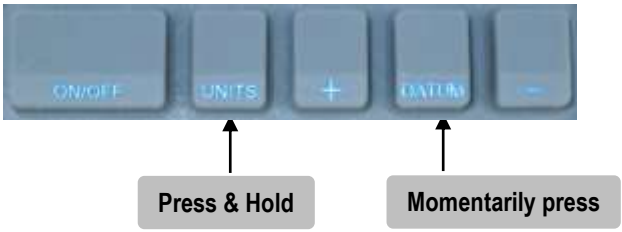


The Readout will:

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: **PG 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.

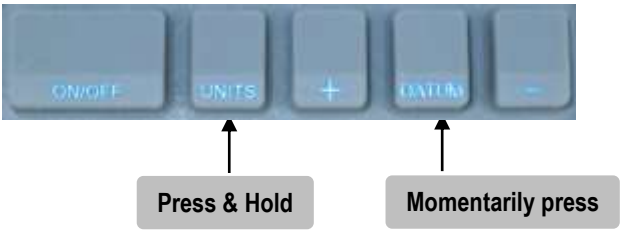
To Increase a Parameter value:
Momentarily press the **plus (+)** key while the Parameter value is displayed.

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 <u>both</u> keys. The Readout will return to normal operation.



NOTE: The Readout will automatically exit programming mode after 60 seconds of no key activity.

The ProPanel-HD and HD E Programming Parameters are listed below.
Values in **[ ]** are the range of values available for that Parameter.
Factory Default Value is shown in **Bold Red.**

Parameters that are CUSTOM SET for ProPanel-HD E operation are:

Parameter Pr2 has been programmed to **1**
Parameter Pr11 has been programmed to **2**
Parameter Pr13 has been programmed to *Custom value per System*
Parameter Pr14 has been programmed to **0**
Parameter Pr30 has been programmed to **1**
Parameter Pr31 has been programmed to **24.00mm**
Parameter Pr39 has been programmed to **1** *(ProPanel-HDE ONLY)*
Parameter Pr41 has been programmed to **1**

Parameters that **DO NOT** apply to ProPanel systems are shown Grayed Out.
NOTE: Programming parameters are not sequentially numbered due to firmware differences between systems and provision for future enhancements / features.

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

The value that will be recalled (on the readout) when the **DATUM** key is pressed. This value would normally be set to 0.00, (Jaws closed) but may be set to any value the readout is capable of displaying.
Default Value= 0.00

Pr 2 – Direction of Travel [0 or 1]

This parameter controls the sign of travel (positive vs. negative) when the measuring system is moved.
FACTORY SET FOR PROPANEL TO 1

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 [0.10 to 10mm]

This parameter sets the amount of jaw movement required to automatically wake up the Readout when it is turned off or in sleep mode.

Default Value = 0.10mm

Pr6-10 NOT USED

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.

FACTORY SET FOR PROPANEL 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 – Readout Auto-Off Time [0 to 240]

This parameter changes the amount of time before the ProPanel-HD Readout 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 (≠ **0**), pressing the **ON/OFF** key or movement of the 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 PAGE 2 FOR THE VALUE ASSIGNED TO THIS PROPANEL

Pr14- FACTORY SET

FACTORY SET FOR PROPANEL SYSTEMS TO 0

Pr15- Pr21 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 INCremental measuring mode.
Default Value = 0

Pr 22 Setting	Key press to enter INCremental mode
0	*Press and Hold* ABS/INC key (1.2 sec)
1	*Momentary* depress 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 Tolerance [.01 - 3048 mm] or [.001 - 120 in]

This parameter sets the amount of drift that must occur in MONitor mode to trigger a drift indication.

Default Value = .01 in

NOT USED FOR PROPANEL SYSTEMS.

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.
FACTORY SET FOR PROPANEL TO 1

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.
THIS OFFSET IS USED WHEN MAKING **INSIDE** MEASUREMENTS
FACTORY SET FOR PROPANEL TO: 24.00mm

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.
THIS SHOULD BE SET TO 1.500 INCHES WHEN USING CONE SET FOR **HOLE-HOLE MEASUREMENTS**
Default Value = 1.500 in. (38.1mm)

NOTE: If ProPanel System and optional Measuring Cone Set are ordered together this parameter will be set to 1.500in at the factory.

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.
THIS SHOULD BE SET TO .750 INCHES WHEN USING CONE SET FOR **HOLE-EDGE MEASUREMENTS**
Default Value = 0.750in. (19.05mm)

NOTE: If ProPanel System and optional Measuring Cone Set are ordered together this parameter will be set to .750in at the factory.

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 – FACTORY SET

NOT USED FOR PROPANEL SYSTEMS.

Pr36 – FACTORY SET

NOT USED FOR PROPANEL SYSTEMS.

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

The Following Programming Parameters were NOT AVAILABLE on ProPanel HD Systems

Pr39 – Non-Linear Compensation [0 or 1]

This parameter Enables/Disables the Non-Linear Compensation function.
FACTORY SET ON PROPANEL-HD E TO 1

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

This parameter sets the distance interval used while performing non-linear compensation calibration.
Default Value = 5.000 in. (127mm)

Pr41 – Temperature Compensation [0 or 1]

This parameter enables (disables) the temperature compensation feature.
FACTORY SET FOR PROPANEL-HD E TO 1

Pr42 & Pr43 – NOT USED

Pr44 – Temperature Compensation Coefficient [10 to 999]

This parameter sets the temperature expansion coefficient used when temperature compensation Pr41 = 1.
Default Value = 150

Range: 10 to 999 will yield values from 1.0 m/m °K x 10^{-6} to 99.9 m/m °K x $10^{-6.}$
Note: Coefficients MUST be in m/m °K.

Optional Wireless Data Transmission

The ProPanel-HD E Readout outputs Mitutoyo Digimatic® SPC. This signal can be converted to USB or RS232 using a ProRF Wireless SPC System.

ProRF SPC
ProRF allows measurement data to be transmitted ***wirelessly*** to a PC or **other device having a USB or RS232 connection. The system uses 802.15.4** radio modules to provide reliable **two way communication**.
See picture below:

ProRF Receiver Module connects to USB port and supports up to 8 Transmitters.

ProRF Receiver & Transmitter
902-6002-001
ProRF Transmitter ONLY
700-1037-001
ProRF Receiver ONLY
700-1038-001

Frequently Asked Questions

What does `no Enc` mean?

If the moving jaw 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 moving jaw is on the Scale and properly oriented.
2. Unplug the Encoder from the Readout for one second and then reconnect the Encoder.
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 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 new battery to clear this message.

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

1. The Readout is in the HOLD mode.
2. The Scaling factor is set very low.

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.

Thank you for choosing a ProScale Product,

IT WAS PROUDLY MADE IN THE USA

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270 Rutledge Rd. Unit E
Fletcher, NC 28732 USA
828-654-7920
www.proscale.com

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P/N 800-1090-105