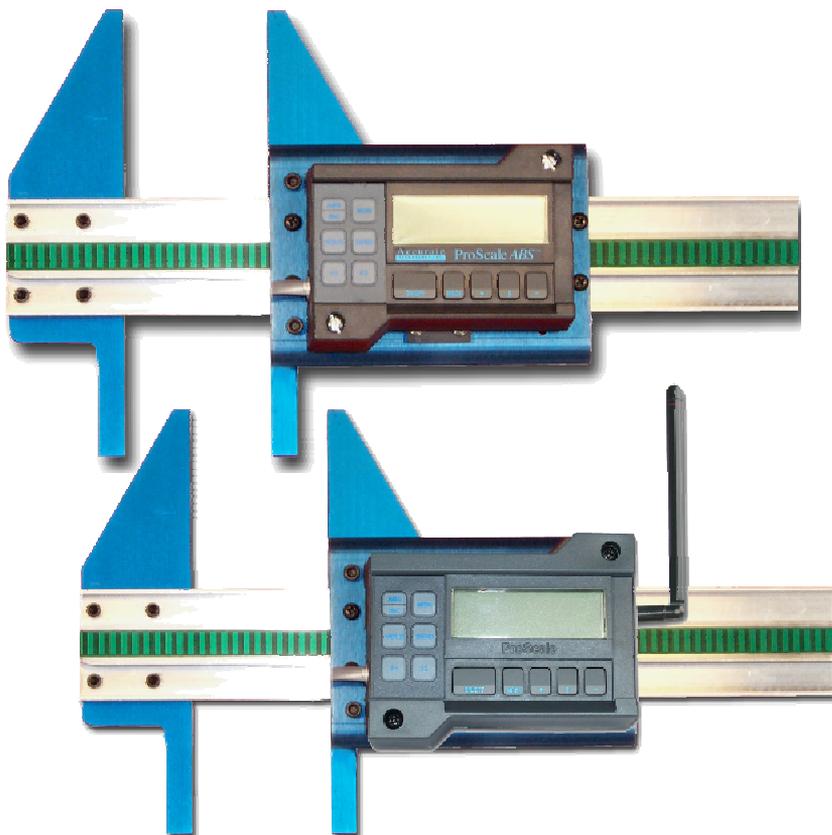


# Accurate

TECHNOLOGY INC.

*Linear Digital Measuring Systems*

ProPanel  
ProPanel-RF  
(Including Receiver)



## User Manual for:

# ProPanel Measuring System

*LCD Display Firmware V2.1x and Higher*

Display Serial # \_\_\_\_\_ Linear Multiplier \_\_\_\_\_

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## FCC NOTICE

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Operation with non-approved equipment is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate this equipment.

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# WARRANTY

Accurate Technology, Inc., warrants the ProPanel Measuring System 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**

**800.233.0580 828.654.8824 (F)**

**[www.proscale.com](http://www.proscale.com)**

**[info@accurate-technology.com](mailto:info@accurate-technology.com)**

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### Introduction

ProPanel™ is a general-purpose portable measuring system. It is ideal for making edge to edge, hole to hole and hole to edge measurements up to 48 inches (1.2m). It has been designed using high quality extruded and machined parts to provide the best accuracy and repeatability.

ProPanel comes in two versions: with or without RF data transmission capability. Since the transmitting function is in the display, all functions of the ProPanel work the same except the [SEND](#) function. Refer to Section 4: [DISPLAY OPERATION](#).

The core technology of the ProPanel is a ProScale™ Measuring System. ProScale measuring systems are affordable precision electronic devices for making linear measurements with speed and accuracy. ProScale consists of a [SCALE](#), a [READHEAD](#) (also called ENCODER) and a digital [DISPLAY](#). ProScale uses capacitive encoder technology, the same technology used in digital calipers.

### What This Manual Includes

This manual includes information for:

**All ProPanel and ProPanel-RF portable measuring systems supplied with LCD Digital Displays with:**

- **Firmware V2.1x and higher.**
- **Firmware V2.2xC and higher.**

(F/W version is displayed on power-up or when power is cycled.)

**ProPanel-RF Receiver**

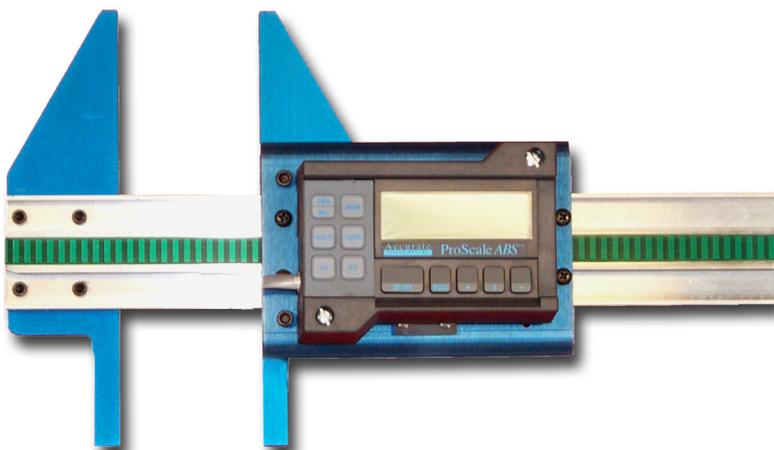
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## ProPanel Specifications

<b>Measuring Range:</b>	48 Inches
<b>Accuracy:</b>	± .015in
<b>Resolution:</b>	Reduced: .1mm/.01cm/.01in; Normal: .01mm/.001cm/.001in; Increased: .01mm/.001cm/.0004in
<b>Repeatability:</b>	.01mm or .001cm or .001in
<b>Display Range:</b>	± 9999.99 mm; ± 999.999 cm; ± 999.999 in; ± 399 63/64 in
<b>Operating Temp:</b>	0 to 51°C, 32 to 120°F
<b>Temp Coefficient:</b>	25ppm/°C; 13ppm/°F
<b>Max. Slew Rate:</b>	600 mm/sec. (24 inches/sec.)
<b>Power:</b>	ProPanel: Two AA Alkaline Batteries ProPanel-RF: Two AA 3.6V Lithium Ion Batteries
<b>Battery Life:</b>	ProPanel: 8-12 months ProPanel-RF: 4-6 months depending on use
<b>Warranty:</b>	Two years from date of purchase
<b>Output Format:</b>	Mitutoyo SPC format.
<b>Readhead:</b>	Six-conductor cable terminated by RJ12 modular connector. To increase or decrease cable length, contact Accurate Technology.
<b>Dimensions:</b>	All product dimensions available upon request or at <a href="http://www.proscale.com">www.proscale.com</a> .
<b>US Patents:</b>	4420754, 4879508, 4878013, 4959615

**All ProScale products are MADE IN USA**

ProPanel & ProPanel-RF are *portable* measuring systems capable of edge-to-edge, edge-to-hole, hole-to-hole, and corner-to-corner measurements up to 1.2m (48in.).



### Assembly

ProPanel is assembled at the factory. If using the ProPanel to measure hole-to-edge or hole-to-hole distances, install the provided cones using the enclosed hex wrench.

### Operation

#### Edge-To-Edge Measuring:

Use ProPanel like a T-square. Close the jaws, and take the measurement. Note: Do not use the extreme outer edges (tips) of the jaws for measurements. Use the full width of the jaw for the most consistent measurements.

#### Corner-To-Corner Measuring:

Place the ProPanel jaws over the panel corners. Gently "wiggle" the ProPanel while applying light closing pressure to seat the corners. Change to Incremental mode. (Press the zero key to zero the display if necessary.) Measure the second diagonal. The difference in diagonal lengths will be shown on the display.

---

## Inside Measuring

Push the F1 key until the LCD displays a flashing “2”. This indicates offset addition 2 ([Programming Parameter Pr11\\*](#)), 1.000 inches (25.40mm), has been automatically applied to the measurement.

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

## Hole-To-Hole Measuring

Install the two “full cone” attachments to the underside of the measuring jaws. Close the ProPanel jaws and push the F1 key until the LCD displays a flashing “3”. This indicates offset addition 3 ([Programming Parameter Pr12\\*](#)), 1.500 inches (38.10mm), has been automatically applied to the measurement.

Place the cones into the holes to be measured. Be sure the cones are fully seated in the holes. Do not press down on the rail of the ProPanel, as this may affect accuracy. The Hole-to-Hole distance is read directly on the Display.

## Edge-To-Hole Measuring

Install one full cone attachment and one half cone attachment. Close the ProPanel. Close the ProPanel jaws and push the F1 key until the LCD displays a flashing “4”. This indicates offset addition 4 ([Programming Parameter Pr13\\*](#)), .750 inches (19.05mm), has been automatically applied to the measurement.

Place the full cone in the hole and the half cone against the edge of the panel. Keeping the ProPanel rail equidistant from the part (by adjusting the half cone's position up or down) will assure the highest accuracy possible. The Edge-to-Hole distance is read directly on the Display.

\* Refer to Section 4: [PROGRAMMING PARAMETERS & OFFSET ADDITION](#) for additional programming information.

## ProPanel-RF

Unless otherwise noted, the operation of the ProPanel-RF is identical to the operation of the ProPanel system without RF data transmission.

## Calibration

The accuracy of the ProPanel system is dependent on the accuracy and manufacturing of the ProScale. Since the ProScale is passive, there are no calibration adjustments available or necessary.

The Displays have a built-in “scaling factor” that allows correction for slight linear inaccuracies that may be observed. Refer to Section 4: [PROGRAMMING](#) (Programming Parameter Pr7) and Section 5: [ABBE ERROR](#).

Calibrating the ProPanel is as simple as closing the two jaws and pressing the **0** key. This operation should be performed while in the ABS measurement mode. See Section 4: [AUXILIARY KEYPAD FUNCTIONS](#).

Once done, lock the Display if desired. This prevents accidental re-zeroing or setting of offsets into the Display. For additional information see Section 4: [LOCK MODE](#)

If desired, the magnitude or direction of movement (+ and -) on the Display can be changed. See Section 4: [PROGRAMMING](#).

To set an arbitrary ‘zero’ point or to set in a value representing the current location of the Sliding Jaw or measuring point, use the **+**, **0** and **-** keys on the Display. Refer to Section 4: [PRIMARY KEY FUNCTIONS](#).

## Maintenance

ProPanels will operate in a dry environment with non-conductive debris such as sawdust, plastic, dust, etc. with no adverse effects. The system should be cleaned of excess debris when necessary. This will prevent premature damage to the Scale or ReadHead. Should the Jaw assembly become difficult to move, check to see if debris has built up under the ReadHead and remove if necessary. Find and remove any burrs which may have developed on the aluminum Scale. Do not use any liquid lubricants on the assembly, as this may impede the jaw’s ability to operate properly and could attract other contaminants to the system as well as swell the black bearings on the jaw assembly, thus making it tighter and harder to move along the scale.

The Display should be cleaned periodically with compressed air to remove any dust on the lens and keys.

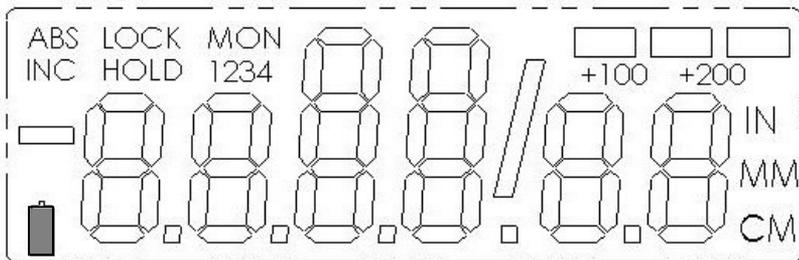
All mounting fasteners should be checked occasionally for tightness. Occasionally check parallelism of the jaws by measuring a thick piece of paper between the upper side of the jaws, then between the lower side of the

jaws. A variation of 0.05mm (0.002 inches) is acceptable. Adjust the black bearings if necessary. Should the jaw become difficult to move, check to see if the scale is clean. Find and remove any burrs which may have developed on the aluminum scale.

## Changing the Batteries

A low battery indicator will appear in the lower left corner of the LCD Display when new batteries are needed.

Press and Hold **ON/OFF** key for 5 seconds to Display Battery Voltage.



### ProPanel

Remove the screws in the upper right and lower left corners of the Display. Pull the cover off. Remove the old batteries. Reinstall 2 new AA Alkaline batteries, noting the proper orientation. Replace the cover and tighten the screws.

### ProPanel-RF:

Remove the screws in the upper right and lower left corners. Pull the cover off. Remove the old batteries. Reinstall 2 new AA **3.6v** Lithium batteries, (part number 550-1026-002) noting the proper orientation. Replace the cover and tighten the screws.

If installing Lithium batteries for the first time, follow the Lithium Battery Conversion Kit (Part # 902-4013-001) instructions. Also See Section 4: **JUMPERS** for correct circuit board jumper settings.

### **CAUTION: DO NOT BEND BATTERY CLIPS!**

**THESE CLIPS ARE DESIGNED TO BE LOOSE WHEN THE CASE IS OPEN AND WILL COMPRESS AND SECURE THE BATTERIES IN PLACE WHEN THE CASES ARE SCREWED TOGETHER.**

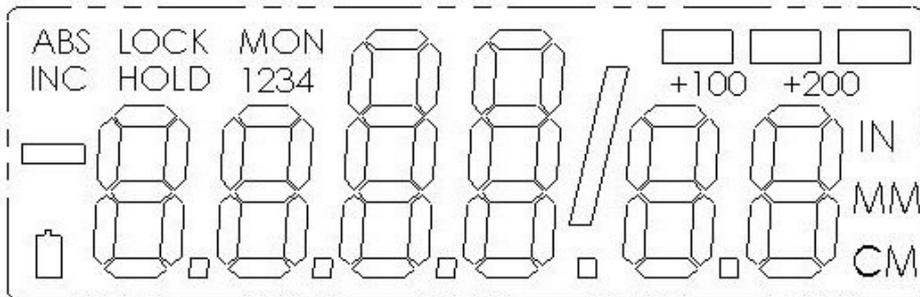
## SECTION 4

## DISPLAY OPERATION

This section covers the programming and operation of ProScale Surface Mount and Panel Mount LCD Displays Firmware\* V2.1 and higher. If your Display Firmware is prior to 2.1, or your Display is different than the Display described here, you must use the appropriate user manual for that Display.

\* (F/W version is displayed on power-up or when power is cycled.)

### The LCD



The above figure illustrates all the segments available on the Display.

**Pressing and holding the ON/OFF and MODE key for 10 seconds with power off will perform a full segment LCD test AND set all programming parameters to factory defaults.**

**PROPANEL SPECIFIC SETTINGS WILL BE LOST.**

### Programming

Several functions of the Display are user programmable. The following describes what features are available and how to change the system's factory defaults to customize the Display for your application.

The keys pictured below have multiple functions. Timing, or how long a key is depressed, and the combination of the keys pressed is important. **This manual uses the term “*momentarily*” to describe a key press of typically less than 1 second. Whereas “*press and hold*” is used to imply a key press of typically longer than 1.5 seconds.**

As an example: When using a computer keyboard to type a capital letter you “*press and hold*” the SHIFT key and “*momentarily*” depress the appropriate LETTER key.

The “*function*” associated with key(s) pressed is executed on the key *RELEASE*, not the key *DEPRESS*. This is important since some keys execute different functions based on how long they are depressed.



To enter **PROGRAMMING MODE**, *press and hold* the **MODE** key and then *momentarily* press the **0** (zero) key. The **MODE** key must be held for approximately 1 second before the depression of the **0** (zero) key.

Once you are in the Programming Mode, *momentarily* pressing the **MODE** key will advance through the Programming Parameter list.

To step backwards in the Programming Parameter list *press and hold* the **ON/OFF** key and *momentarily* press the **MODE** key.

*Momentarily* pressing the **+** (plus) key while displaying a Programming Parameter will increase the parameter setting.

*Momentarily* pressing the **-** (minus) key while displaying a Programming Parameter will decrease the parameter setting.

*Momentarily* pressing the **0** (zero) key while displaying a Programming Parameter will rest the parameter to its factory default setting.

To exit **PROGRAMMING MODE**, *press and hold* the **MODE** key and then *momentarily* press the **0** (zero) key.

**NOTE:** The Display will automatically exit **PROGRAMMING MODE** after 60 seconds of no key activity.

## Programming Parameters

Programming Parameters are listed below. Values in [ ] are the available range of values that can be programmed for that entry. Factory defaults are shown in **Red**.

Programming Parameters specific to ProPanel are shown **highlighted**.

Programming Parameters that do not apply to ProPanel are shown in Gray.

Some Programming parameters, **Offset Addition** and **Limit mode**, indicate a '**factory default set in inches**'. The equivalent offset/limit value in mm or cm is applied if you switch the measurement **MODE** of the Display to mm or cm. (i.e. If 5.00(in) is set, when the Display is switched to mm the programmed offset/limit is now 127mm.)

---

**Pr0 – Reading Direction** [0,1]  
Change/Reverse the direction (+ vs -) of readings.

**Pr1 – Enable/Disable Segment Offset** [0,1]  
**0 = For ALL ProPanel Systems**  
1 = For All ABSOLUTE Scales

**Pr2 – High Speed ReadHead** [0, 1]  
0 = Normal ReadHead  
1 = High Speed ReadHead  
Use *only* if instructed. A setting of 1 will impact battery life.

**Pr3 – Enable/Disable the +, - and ZERO keys** [0,1]  
0 = Disables operation of Zero, + and – keys (Forced Lock Mode).  
1 = Enables operation of Zero, + and – keys.

**Pr4 – Display Resolution** [0, 1, or 2]  
Sets the displayed resolution. (No change in fractions mode.)  
0 = Reduced resolution      Inch = xxx.xx    MM = xx.x  
1 = Normal resolution      Inch = xxx.xxx    MM = xx.xx  
2 = Increased resolution\*      Inch = xx.xxxx (no change in mm)  
\*(Automatic scaling will allow measurements of over 100 inches when in high resolution. Measurements over 100 inches will automatically be reduced to 3 decimal places.)

**Pr5 – Metric Display Units** [0, 1]  
Controls whether the measured value is displayed in millimeters or centimeters when metric mode is selected.  
0 = millimeters  
1 = centimeters

**Pr6 – Disable Fractions/Inches** [0, 1, 2]  
0 = All measurement modes (mm or cm, inches and fractions).  
1 = No Fractions. Only decimal inches and metric units\*.  
2 = Only Metric. No Imperial (inches or fractions) will be displayed.  
\* Pr5 will determine if mm or cm are displayed for metric units.

**Pr7 – Scaling Factor** [.0001 .. 99.9999] **Default = 1.0000** (No Scaling.)  
The multiplier applied to the measurement. Scaling factors less than 1.0000 will make the displayed measurement less than the actual measurement. Scaling factors greater than 1.0000 will make the displayed measurement greater than the actual measurement.  
**Set at factory and is unique for each ProPanel**

---

### Pr8 – Automatic Power Off

[0 to 60] **Default = 15**

Sets the amount of time in ‘minutes without activity’ before the Display automatically turns off.

0 = Disables Automatic Power Off.

ReadHead motion or ON/OFF key will “wake-up” the Display and reset the timer.

### Pr9 – Auxiliary Keys Enable/Disable

[0..7]

0 = ABS/INC, MON and HOLD Disabled

1 = ABS/INC Key Enabled

2 = MON Key Enabled

4 = HOLD Key Enabled

7 = All Keys Enabled

To enable keys, add up combination of key values. A value of 2 enables only the MON key. A value of 7 enables all 3 keys.

### Pr10 – Offset Addition Enable

[0, 1]

0 = Offset Addition Disabled.

**1 = Enabled for ProPanel Systems.**

SEE ALSO Pr11, Pr12, Pr13.

### Pr11 – Offset Addition 2

**Default = 1.000 in. (25.40mm)**

When offset 2 is selected (see Section 4: [OFFSET ADDITION](#)), this value is added to the current ABS position.

Only active if Pr10 is set to 1. *Default is set in Inches.*

**Used for “Inside” measurements on ProPanel systems**

### Pr12 – Offset Addition 3

**Default= 1.500 in. (38.10mm)**

When offset 3 is selected (see Section 4: [OFFSET ADDITION](#)), this value is added to the current ABS position and displayed.

*Only active if Pr10 is set to 1. Default is set in Inches.*

**Used for “Hole-Hole” measurements on ProPanel systems**

### Pr13 – Offset Addition 4

**Default= 2.000 in. (50.80mm)**

**Set to .750 in. for ProPanel Systems**

When offset 4 is selected (see Section 4: [OFFSET ADDITION](#)), this value is added to the current ABS position and displayed.

*Only active if Pr10 is set to 1. Default is set in Inches.*

**Used for “Edge-Hole” measurements on ProPanel systems**

---

**Pr14 – Output Monitor Mode**

[0, 1]

Configures the hardware output signal for activation on MONitor drift conditions OR the digital Display for Upper/Lower Limit display.

0 = Monitor drift

1 = Limits Display

SEE ALSO Pr15, Pr16, Pr17

**Pr15 – Output Polarity**

[0, 1]

Used to configure the signal output.

0 = N/O, the output is Normally Open (not conducting to ground).

1 = N/C, the output is Normally Closed (conducting to ground).

**Pr16 – Lower Limit****Default = 0.000 in. (0.00mm)**

Sets the Lower Limit (LL) value.

Pr14 must be set to 1

**Pr17 – Upper Limit****Default = 5.000 in. (127.00mm)**

Sets the Upper Limit (UL) value.

Pr14 must be set to 1

**Pr18 – Drift Tolerance** [.001 to 999.999in] or [.01 to 9999.99mm ]

Range of motion allowed (+ or -) while in MONitor mode.

**Default is set in Inches.**

**Default = .010 in. (.254mm)****Pr19 – Automatic Monitor ON Time**

[0, 1 or 2]

Configures Display to automatically activate MONitor mode after 30 or 60 seconds of ReadHead inactivity.

0 = disabled

1 = 30 seconds

2 = 60 seconds

**Pr20 – Automatic Monitor OFF Enable**

[0, 1]

Configures Display to automatically exit MONitor mode after a programmed distance (**Pr21**) has been exceeded from the drift tolerance position (**Pr18**).

0 = disabled

1 = enabled

**Pr21 – Automatic Monitor OFF Distance**

[0.001 to 999.999in] or [0.01 to 9999.99mm].

The distance that must be exceeded from the drift tolerance position (**Pr18**) to deactivate monitor mode.

**Default set in Inches.**

**Default = 0.500 in. (12.70mm)**

Active only when Pr20=1.

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**Pr22 – Backlight ON time** [0, 1, 2, 3 or 4]  
The ON time of the LCD backlighting (24VDC Displays only).  
0 = always off.  
1 = 3 seconds.  
2 = 7 seconds.  
3 = 15 seconds.  
4 = always on.

**Pr 23 Future Use** [1]  
DO NOT CHANGE

**Pr 24 Display RF Address** [0 to 63]  
This parameter is used to set the address of the Display.  
0= (RF off)

**Pr 25 RF System ID** [0 to 31]  
This parameter is used to set the ID of the Display system (or family).

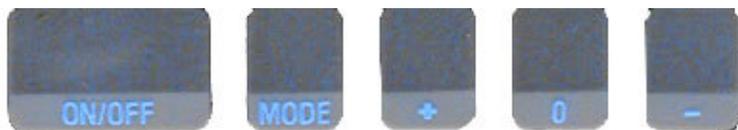
**Pr 26 Noise Suppression** [0..7]  
This setting helps filter error causing interference caused by stray electrical noise when the Display is mounted on or around a machine.  
0 = Minimum filtering  
7 = Maximum filtering

**Pr 27 Accuracy Compensation Enable** [0, 1]  
This setting enables the ProScale Display measurement compensation feature.  
0 = Compensation Off  
1 = Compensation On

**Pr 28 Compensation Multiple** [5]  
This value is the length of the measurement standards used for Accuracy Compensation Calibration.  
The default is 5 inches. If some other multiple (length) is used, change this value to match the multiple (length). i.e. 6”.

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## Primary Key Functions



### ON/OFF

Momentarily pressing the **ON/OFF** key will cause the Display to turn on or off. The Firmware Version is momentarily displayed on power-up. While on, if no key presses or positional changes occur within 15 minutes\*, the Display will automatically turn itself off to conserve battery life. While off, if a position change is detected (larger than .05mm or .002in), the Display will automatically turn itself on with no loss of measurement information.

**\*(Programming Parameter Pr8)**

Pressing and holding the **ON/OFF** key for 5 seconds while the Display is turned on will display internal battery voltage.

**Pressing and holding the ON/OFF and MODE key for 10 seconds with power off will perform a full segment LCD test AND set all programming parameters to factory defaults.**

**PROPANEL SPECIFIC SETTINGS WILL BE LOST.**

### MODE

The ProScale can display measurement information in Inch or Metric. To change the display mode, momentarily press the **MODE** key. With each key press, the Display will cycle through decimal inches, fractional inches\* (1/16), (1/32), (1/64) and metric (mm or cm based on setting of **Programming Parameter Pr5**). \* If enabled by **Programming Parameter Pr6**.

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

The Resolution of the Display can be set for NORMAL: (.01mm or .001in), REDUCED: (.1mm or .01in) or INCREASED: (.01mm or .0005in).

**(Programming Parameter Pr4.)**

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## +, 0, and – Keys

The **+** (plus), **0** (zero) and **–** (minus) keys are used to change the currently displayed position to a different value. The **0** key forces the unit to display 0. Momentarily depressing the **+** key increments the current position by one unit of measurement. Momentarily depressing the **–** key decrements the current position by one unit. Pressing and holding the **+** or **–** keys will cause the displayed position to change continuously. Holding down the key will cause the amount of change to speed up. This allows for quick adjustments over a range of large values. These keys can be “locked out” to prevent accidental offset or zero entries.

**(Programming Parameter Pr3)**

## Auxiliary Keypad Functions

The Auxiliary Keypad is found on both ProPanel models.

**(Programming Parameter Pr9)**

### ABS - INC

The Display has two measurement “indexes”. One is referred to as **ABS** and the other is **INC**. The **ABS** measurement setting is designed to allow the user to set an “absolute” zero point on the Display referenced from a fixed or known position. The **INC** measurement setting is designed to take relative or “incremental” distance measurements from one arbitrary point to another. The settings operate independently allowing separate position offsets to be programmed for ABS and INC. The **ABS** position of the measuring system is not lost when using the **INC** settings.



**ABS** Mode – The Display automatically enters ABS mode when power is first applied. This is indicated by the ABS symbol in the upper left corner of the Display. While in the ABS mode, all position measurements are related to the current system reference point. To enter the INC mode, momentarily press the **ABS/INC** button.

**INC** Mode – While in the INC mode, the INC symbol is shown in the upper left corner of the Display. When the INC mode is initially entered, the displayed position will change to reflect a new reference point at the current position of the ReadHead. This is typically a position of zero (0) but may be changed by using the **+** or **-** keys to provide an offset. Moving the ReadHead 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 Display will again change to 0 (or the previously programmed offset). To return to the ABS mode, press and hold the **ABS/INC** key for 3-4 seconds.

---

## MONitor

This function is available but rarely used on ProPanel systems.

The Display has the ability to monitor a measurement position to detect position drift or measurement variance. To activate the monitoring mode, position the ReadHead to the desired location and momentarily press the **MON** key. The MON symbol will flash on the display to indicate that the position monitor mode is active.

If the ReadHead moves outside the programmed tolerance (Pr18) the reading flashes, indicating a drift condition. When the ReadHead is moved back within the programmed tolerance, the displayed reading will stop flashing.

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

NOTE: Monitor mode can only be activated while in the ABS measuring mode. If the ABS/INC key is depressed while monitoring, the position-monitoring mode is automatically exited.

The Display can be programmed to automatically enter or exit the MONitor mode based on elapsed time or movement of the ReadHead.

If the programmable auto monitor is enabled (Programming Parameter Pr19 set to 1), the Display will automatically enter monitor mode after either 30 or 60 seconds without Jaw movement. If the programmable auto monitor is disabled, the ProScale will automatically exit monitor mode if the ReadHead is moved beyond a programmable distance from the monitored position. This option, in conjunction with auto monitor activation, allows the ProScale to be kept in monitor mode without manually pressing the monitor key.

**(Programming Parameters 18,19,20, 21)**

## HOLD

The Display provides a feature that allows the displayed position to be “frozen” in time while the ReadHead is moved from its measuring position. This allows measurements to be captured on the Display and held for later viewing regardless of the current ReadHead position. To activate the HOLD mode, momentarily press the **HOLD** key. The HOLD symbol will be shown in the upper left corner of the Display. The currently displayed position and selected key presses will be frozen at this point. To release the HOLD feature, momentarily press the **HOLD** key again, or cycle power.

---

## SEND

The Display provides an output port that can be used to send measurement information to a compatible SPC device such as a printer or data acquisition unit. After connecting the SPC device to the 10 pin connector on the Display, the user may initiate the data transmission by momentarily pressing the **SEND** key. This signals the SPC device to acquire the data from the Display. Pressing the **SEND** key displays “ **Snd** ” on the Display for 1 second to show activation of the send function (even if no SPC device is attached to the Display).

The data format and connector style of the Display SPC output is the same as Mitutoyo (Digimatic®) SPC. This is an industry standard that can be interfaced with most available SPC products including multiplexers, RS232 converters and PC plug-in boards. Data from the Display is sent to the SPC connector in either millimeters or decimal inches, whichever is currently displayed on the LCD.

If no SPC device is attached to the Display, the SEND key has no other function.

## ProPanel-RF

On ProPanel-RF the **SEND** key also activates the transmitter and will send measurement information to the RF Wireless Receiver. The receiver decodes this information and makes it available at its RS232 connection in one of six modes:

Mode	Description
0	Position only
1	Position with units type (MM or IN)
2	Position with Display (transmitter) ID
3	Position with units and Display ID
4	Full Message Display
5	Binary Mode ProRF emulation

See Section 6: [PROPANEL-RF RECEIVER](#) for additional configuration information.

## F1

F1 is used for **OFFSET ADDITION**. Pressing F1 will cycle through 4 independent offsets of which 3 are user programmable (Pr11, 12 & 13). These offsets are preset in the ProPanel as follows:

1. Absolute Reading Most measurements
2. Absolute + 1.000in Inside measurements
3. Absolute + 1.500in Hole to Hole measurements
4. Absolute + 0.750in Hole to Edge measurements.

## F2

F2 is used on [ProPanel-RF](#) to send “**DEL**” indicating the last measurement sent should be ignored/deleted.

---

## Display Functions

### Lock Mode

The user can “lock-out” the position offset adjustment functions (+, 0, - keys) to prevent accidental changes of the current displayed position. To activate the lock mode, press and hold the **ON/OFF** key and then momentarily press the **MODE** key. The word LOCK on the LCD Display will turn on or off with each lock/unlock operation. When the LOCK symbol is displayed, the +, 0, and - keys will not change the displayed position. ABS and INC modes have independent lock operations. **(Programming Parameter Pr3)**

### Offset Addition

Offset addition allows the user to preset up to 3 different values that are added to the Display reading when selected. This function allows the user to quickly switch from one reference point to another such as in the case of inside, outside, hole to hole and hole to edge measurements on the ProPanel measuring system.

To utilize the offset addition feature, programming parameter Pr10 must be set to 1. The Display will then flash one of “offset” numerals **1, 2, 3** or **4** located in the upper left corner of the LCD. Offset 1 is the ABS position with no offset value added. Offset 2 is the ABS position with parameter Pr11 (Offset Addition 2) added to it. Offsets 3 and 4 have similar functions with parameters Pr12 and Pr13 added to the ABS position respectively.

To move from Offset 1 to 2, momentarily press the F1 key. Each depression of the F1 key advances to the next offset. After offset 4, the Display will move back to offset 1. This feature is useful for setting offsets associated with using the “cones” supplied with the ProPanel.

**(Programming Parameters 10, 11, 12 and 13)**

### Limit Mode

The Display will show either “LL” for Lower Limit or “UL” for Upper Limit if a pre-programmed upper or lower reading is encountered. Upper and Lower Limits are set with Programming Parameters Pr16 and Pr17 but are only active if Pr14 is set to 1. The readout toggles for 2 seconds between current position display and “LL” or “UL”. This continues as long as limit is exceeded.

**(Programming Parameters 14, 16 and 17)**

### Scaling

ProPanels have the ability to “scale” the actual measurement. This function is useful when the actual measurement must be multiplied or divided before being displayed. This value is set during manufacturing and will correct for minor linear errors in the system. Care should be taken when using this function since it will cause the unit to display a reading different than the actual measured value if changed from the factory setting.

**(Programming Parameter Pr7) This value is set for each individual ProPanel.**

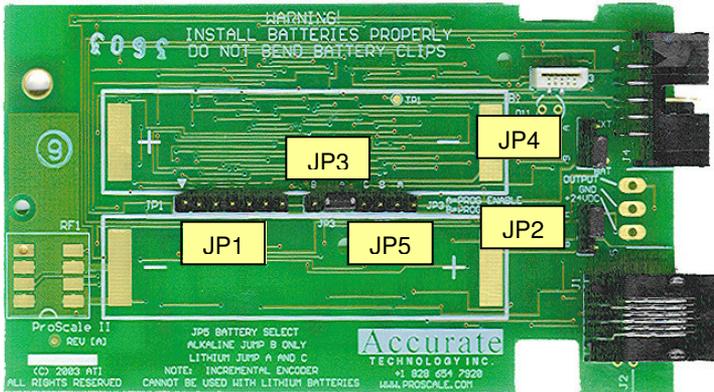
---

## Jumpers

Although the ProScale Display uses a keyboard-programming method to enable and configure features in the unit, several selection jumpers are located on the circuit board for additional system configuration.

User configurable jumpers consist of three pins and a 'shorting block'.

The center of these pins is 'Common'. One end pin is labeled 'A' and the other end pin is labeled 'B'.



### **JP1 FOR FACTORY USE ONLY**

### **JP2 ProPanel Model**

For all ProPanel systems with Alkaline batteries this jumper must be installed in position B.

For all ProPanel-RF systems and ProPanels with Lithium batteries, this jumper must be installed in position A.

### **JP3 Programming Enable/Disable**

Front panel entry to the programming mode of the Display can be enabled or disabled. To enable programming (default), install the shorting jumper in position A. To disable programming, install in position B. When programming mode is disabled, the user cannot access the programming functions via the **Mode + 0** keys as described in the Section 4: [PROGRAMMING](#). This provides the user with a method of configuring the Display with specific parameters and prevents unauthorized configuration changes.

### **JP4 Display Type**

All ProPanels are factory set to position B.- Do not change

### **JP5 Battery Selection**

For 1.5v Alkaline Batteries the jumper must be placed across the 2 B pins. For 3.6V Lithium Batteries the jumpers (2) must be placed across pins A&B and B&C (see also JP2 for lithium battery setting).

## Programming Summary

The following settings apply to ProPanel Serial # \_\_\_\_\_

Parameter	Function	Factory Default	This System
Pr0	Reading Direction	0	_____
Pr1	Segment Offset	1 - On	<b>0 – Off</b>
Pr2	High Speed ReadHead	0 - Off	_____
Pr3	Zero, Offset Entry	1 – Enable	_____
Pr4	Display Resolution	1 - Normal	_____
Pr5	mm or cm	0 - mm	_____
Pr6	Fractions, mm, in	0 - all	_____
Pr7	Scaling	1.0000 (none)	<b>_____</b>
Pr8	Auto off	15 - 15 min.	_____
Pr9	Auxiliary Keypad	7 - all keys	_____
Pr10	Offset Addition	0 - disabled	<b>1 - Enabled</b>
Pr11	Offset Addition 1	1.000 Inch	_____
Pr12	Offset Addition 2	1.500 Inch	_____
Pr13	Offset Addition 3	2.000 Inch	<b>.750 in</b>
Pr14	Output Mode	0 - drift	_____
Pr15	Output Polarity	0 – Normally Open	_____
Pr16	Lower Limit	0.000	_____
Pr17	Upper Limit	5.000 Inch	_____
Pr18	Drift Tolerance	.010 Inch	_____
Pr19	Auto Monitor ON	0 - disabled	_____
Pr20	Auto Monitor OFF	0 - disabled	_____
Pr21	Auto Monitor Distance	.500 Inch	_____
Pr22	Backlight On	4 - Always	_____
Pr23	FUTURE FEATURE	1	_____
Pr24	RF Display Address	0 – Off	_____
Pr25	RF System ID	0	_____
Pr26	Noise Suppression	0 – Minimum	_____
Pr27	Accuracy Comp. Enable	1 – ON	_____
Pr28	Compensation Multiple	5 – 5 in.	_____

Programming Parameters that do not apply to ProPanel measuring systems are shown in Gray.

Programming Parameters specific to ProPanel are shown **highlighted**.

**Pressing and holding the ON/OFF key and MODE key for 10 seconds with power off will perform a full segment LCD test AND set all Programming Parameters to factory defaults. ProPanel specific settings will be lost.**

### Printed Circuit Board Jumper Information:

JP1	Factory Use Only	
JP2	Position <b>B</b> for ProPanel	Position <b>A</b> for ProPanel-RF
JP3	Programming	Enable/Disable
JP4	Position <b>B</b> for ProPanel	DO NOT CHANGE
JP5	Battery Selection	Alkaline or Lithium

---

## Key Press Function Summary

How long a key is depressed, and the combination of the keys pressed is important. The term (*Momentarily*) describes a key press of typically less than 1 second. Whereas (*Press & Hold*) is used to imply a key press of typically longer than 1.5 seconds.

For example: When using a PC keyboard to type a CAPITAL letter you would “*press and hold*” the SHIFT key and “*momentarily*” depress the LETTER key. In addition, a key(s) “*function*” is executed on the key RELEASE, not the key DEPRESS of that key(s). This is important since some keys execute different functions based on how long they are depressed. These key operations, once tried, quickly become intuitive.

**ON/OFF** (*Momentarily*)

**RESULT:** Turn Display power on or off.

**ON/OFF** (*Press & Hold*) for 5 seconds

**RESULT:** Display Battery Voltage.

**ON/OFF** (*Press & Hold*) + **MODE** (*Momentarily*)

**RESULT:** Enable/Disable LOCK mode.

**ON/OFF** + **MODE** (*Press & Hold Both keys*) for 10 seconds (display off)

**RESULT:** LCD Segment Test & reset to factory defaults

**MODE** (*Press & Hold*) + **'0'** (*Momentarily*)

**RESULT:** Enter or Exit Programming Mode.

### While in Programming mode:

**MODE** (*Momentarily*)

**RESULT:** Advances the Programming Parameter list.

**ON/OFF** (*Press & Hold*) + **MODE** (*Momentarily*)

**RESULT:** Step Programming Parameter list backwards.

+ (*Momentarily*) while displaying a Programming Parameter

**RESULT:** Increases Programming Parameter setting.

- (*Momentarily*) while displaying a Programming Parameter

**RESULT:** Decreases Programming Parameter setting.

**0** (*Momentarily*) while displaying a Programming Parameter

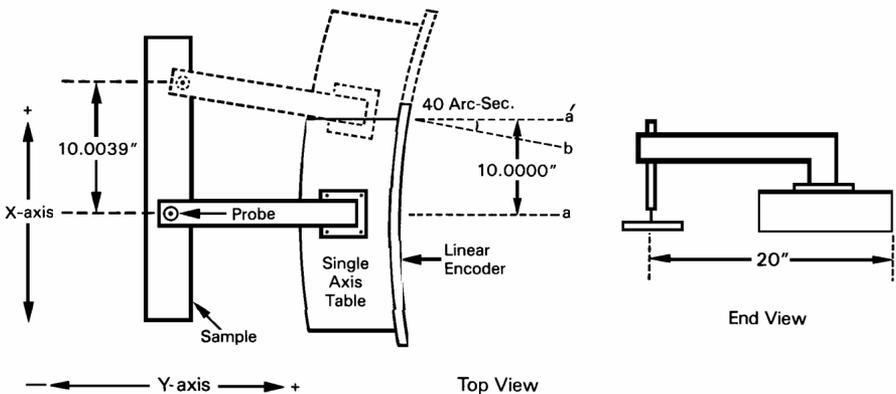
**RESULT:** Sets Programming Parameter to Default.

**Abbe Error**

Abbe error is a condition that may not be visible to the human eye, but will affect linear measurements. Be sure to take precautions when installing your ProScale system in order to eliminate the possibility for Abbe error.

Abbe error refers to a linear error caused by the combination of an angular error and a dimensional offset between the sample and the measuring system. It is important to understand that the information the ReadHead is providing is **only the position of the ReadHead on the Scale**. To illustrate this, see the figure, which shows a linear measuring device. (The apparent distortion in the measuring device is intentional - for this example - to show the measuring device with a curvature in its mounting.)

Suppose the curvature in the figure is sufficient to produce an angle of 40 arc-seconds. If the measuring device moves 10 inches, the probe will be found to have moved 10.0039 inches, resulting in an error of +0.0039 inches. Abbe error could be lessened by moving the measuring system closer to the sample. This effectively solves one half of the Abbe error problem (offset) and leaves only the angular mounting problem to be solved. Angular error can best be countered through proper design and placement of the linear scale.



Sources of angular error include:

1. Mounting the linear Scale to an imperfectly flat surface.
2. Mounting the linear Scale to an imperfectly straight surface.
3. Curvature of ways (or linear bearings) used to measure the sample.
4. Contaminants between the probe and item being measured.
5. Friction in any part(s) of the measuring device.

---

## Frequently Asked Questions

### What does “no Enc” mean?

If the ReadHead is off the Scale, or the ReadHead cable is unplugged from the Display, a “no Enc” will appear on the Display. To clear error:

1. Be sure the ReadHead is on the Scale and properly oriented.
2. Unplug the connector from the Display for one second.
3. Reconnect the ReadHead cable to the Display.

### The battery clips seem to be very loose. Is this normal?

**YES! DO NOT** attempt to bend these clips or wedge anything between them and the case. These clips are designed to expand when the two case halves are screwed together.

### The Display does not change, or changes very little, as the Jaw moves.

1. The Display is in the HOLD mode. Press & release the Hold button.
2. The Scaling factor is set very low.

### Introduction

The receiver provides one-way wireless communication channel between the ProPanel-RF and a computer or other RS232 device. Depending on the receiver model, the unit has the ability to receive signals from either a single or multiple ProPanel-RF systems.

The following is a list of features for the ProPanel-RF receiver:

- Six output formats to support various data collection requirements.
- Programmable data field delimiter character.
- Programmable line terminator.
- Record start sentinel character enable/disable.
- Character echo enable/disable.
- 2400 to 115200 Baud rate selection.
- System ID selection. Prevents interference from multiple ProPanel-RF systems.
- Typical signal range: 50' to 100' depending on the environment.
- Serial output transmit/receive reversal via jumper selection (null modem). Allows unit to switch from slave mode (PC use) to master mode (for use with other devices).
- Receiver configuration is stored in non-volatile memory. Configuration is completed using a standard terminal program such as HyperTerminal™.

### Terminology

**ASCII Text** – Standard English text that is used in conjunction with computers. This can include upper and lower case letters, numbers and punctuation.

**Field** – A field is an individual data element such as position, units or other information.

**Delimiter** – A character that is used to separate individual fields from one another, such as a space or tab.

**Entry Record** – A group of fields separated by delimiter characters that together form an entry in a computer file.

**Terminator** – A special character(s) that is used to terminate an entry record.

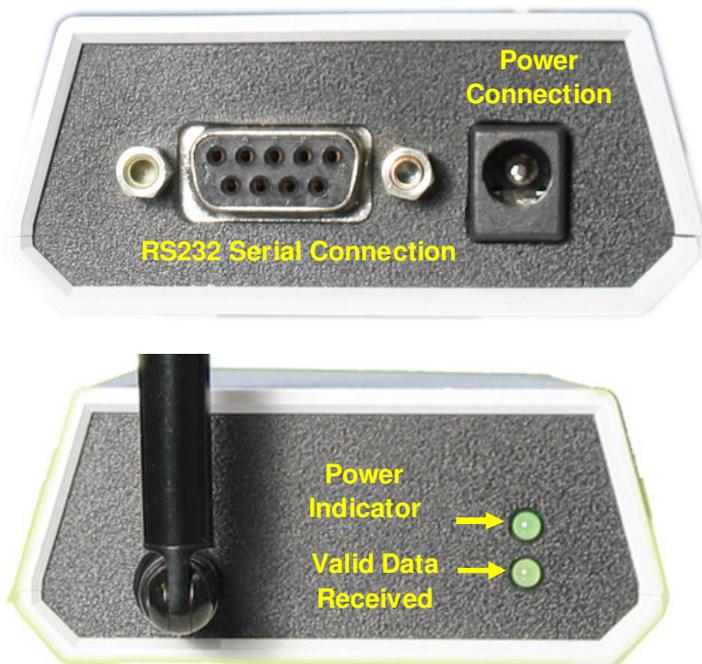
**Record Start Marker** – A special character that is used to indicate the start of a record being received. In this case, the marker is an asterisk (\*).

---

## Installation

The ProScale RF receiver is simple to install and connect to a PC.

1. Connect the low voltage DC power supply (provided) to the rear of the receiver. Plug the power supply into an AC outlet. The top green LED on the front of the receiver will illuminate.
2. Connect the male (pin) end of the DB-9 serial cable (provided) to the rear of the receiver. Connect the female (socket) end to the PC serial port. *Note: If using a newer laptop computer, there may be no RS-232 port installed on your PC. In this case, it is recommended that you purchase a USB/Serial adapter from your local office supply store.*
3. Set the receiver in a location that is centrally located to receive signals from your ProPanel-RF(s). Do not place the receiver next to large metal objects such as a filing cabinet as this may significantly reduce the receiving range.



---

## Configuration

Depending on the receiver model you have purchased, the unit has the ability to receive signals from either a Single ProPanel-RF or from Multiple ProPanel-RFs.

After the receiver is connected to the computer and power applied, the unit can be configured for operation.

Start a terminal emulation program such as HyperTerminal™. Configure the terminal program for the serial port being used to communicate with the receiver.

The following are the **default settings** of the receiver:

- 9600 baud
- 8 data bits
- No parity
- 1 stop bit.
- Flow Control: None

Although the receiver can be configured for different baud rates, the other communications parameters are fixed and cannot be altered.

When the serial port has been configured and opened, the user can test the communications by requesting the receiver's firmware version. This is accomplished by typing the command letter v or V followed by the ENTER key. The receiver will respond with: "**ProScale Receiver V1.000**" or similar message.

---

## Command Format

The receiver uses a standard format for all configuration commands.

1. A single command letter. Lower case letters allow the current parameter state to be viewed without modification. Upper case letters allow the user to change the parameter configuration.
2. One or more characters are used when modifying configuration parameters. They have no effect when parameters are viewed (lower case command letters).

The following is a list of command letters and their meanings:

- V** – Firmware version ID. No parameters.
- S** – System ID. Used to configure the receiver to only accept signals from ProScale-RF displays that have the same system ID. This prevents signals from other ProScale-RF displays with different system ID's within radio range from being received. The default is 0.
- O** – Output mode. Formats the record text for the desired data content. See [OUTPUT MODES](#) for more information. The default is mode 3; position, units and display ID.
- D** – Configures the delimiting character that is used to separate fields within a record. The default is a space.
- E** – Enables or disables the character echo when typing in data from the terminal program. The default is ON.
- M** – Record Start Marker. Enables or disables the use of the new record start (sentinel) character, which is an \*. When enabled, each new record received starts with an asterisk (\*). The default is OFF.
- T** – Record Terminator. Each record can be terminated with either a carriage return or carriage return and line feed. The default is carriage return and line feed (CR/LF).
- B** – Baud Rate. Sets the baud rate used to communicate with the receiver. The default is 9600 bits per second.

---

## Output Modes

There are six output modes (0-5) available on the ProPanel-RF receiver. The first five, (modes 0-4), are ASCII text formats and the sixth (mode 5) is a binary data mode that provides partial message emulation for Accurate Technology's ProRF™ **two-way** radio system. This provides backward compatibility for applications that were designed using the ProRF system.

<u>Mode</u>	<u>Output Description</u>
0	Position only
1	Position with units type (MM or IN)
2	Position with display (transmitter) ID
3	Position with units and display ID
4	Full Message Display
5	Binary Mode ProRF emulation (Use this mode when interfacing with <i>TigerStop™</i> )

In the case of output mode 0, an ASCII position is provided followed by the programmed terminating character; carriage return or carriage return and line feed (CR or CR/LF). In the other text modes, each field is separated by the programmed delimiting character (<space> by default). The entire line or record is then followed by the programmed terminating character.

The following are examples of output modes 0 through 3:

### Output mode 0

**Example:** *Position<terminator>*  
5.637

### Output mode 1

**Example:** *Position<delimiter>Units<terminator>*  
5.637 IN

### Output mode 2

**Example:** *Position<delimiter>ID<terminator>*  
5.637 3

### Output mode 3

**Example:** *Position<delimiter>Units<delimiter>ID<terminator>*  
5.637 IN 3

---

## Output mode 4

### **Full Message Display**

The full message display mode provides two types of messages depending on the type of signal received.

- Position Information
- Status Information

When **position** information is received, the resulting message output is:

*Position<delimiter>Units<delimiter>ID<delimiter>Signal Strength<terminator>*

When **status** information is received, the resulting message output is:

*Drift status<delimiter>Battery status<delimiter>ID<delimiter>Signal Strength<terminator>*

The position information is similar to Output Mode 3 with the addition of a signal strength indication. Signal strength is represented by a value from 0 to 7 where 0 is a very weak signal and 7 is a very strong signal. This can be used for verifying the quality of signal reception from a particular transmitter location.

#### **Example (position information):**

*Position<delimiter>Units<delimiter>ID<delimiter>Signal Strength<terminator>*

5.637 IN 3 5

The status information is used in conjunction with the drift monitor feature of the ProScale display. This is a feature that is rarely, if ever, used on ProPanels. If the drift monitor is enabled on the display and movement is detected outside the drift tolerance range, the display will indicate a drift condition and a drift signal will be sent on the RF channel. If a low battery condition is detected, this will also be indicated in the status information.

In the case of the Full Message Display option, the “delete previous measurement” message (see: Section 4: [OPERATION](#) and Section 6: [DELETING A PREVIOUS MEASUREMENT RECORD](#)) is in the format:

*DEL<delimiter>ENTRY<delimiter>ID<delimiter>Signal Strength<terminator>*, where DEL is substituted for the position and ENTRY is substituted for the units.

## Output mode 5

This output mode is intended to be used with applications that were designed for the ProRF **two-way** radio interface system. The output from this receiver is a small subset of the functionality from the ProRF. Since the ProPanel-RF receiver is **one-way** only, no acknowledgment signal can be sent.

The binary message packet reports a combination position/status message. This message packet is described below in an outline format.

### Measurement Sample:

Receiver's Address [255] (Base)	Sender's Address [1 -254]	Command Header ['A']	RSSI Value ['1' - '7'] 1 = low signal 7 = high signal	Message Packet ID [0 - 255]	Number of Data Bytes [13]
Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
Module Type [1]	Module Status [0 - 0xFF]	Encoder Status [0 - 0xFF]	Data Capture Latch [0 - 0xFF]	Units of Operation [0] = mm. [1] = in.	ASCII Position Data ['0' - '9' ':' '-' ]
Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Bytes 12 - 19

*Note: In the ProScale RF emulation mode, bytes 7 through 10 of the message are fixed at 1, 0, 1, and 1 respectively.*

### Example:

Position packet message, position 8.537 inches from display unit ID 1, signal strength 5, message 34.

Byte Number	Value	Description
1	255	Destination address (receiver)
2	1	Display address ID
3	'A'	Position command character ASCII A
4	'5'	Signal strength ASCII 5
5	34	Message ID
6	13	Number of data bytes to follow
7	1	Always 1
8	0	Always 0
9	1	Always 1
10	1	Always 1
11	1	1 = inches, 0 = mm
12	' '	space if positive, '-' if negative
13	' '	hundreds digit
14	' '	tens digit
15	'8'	ones digit
16	'.'	decimal point
17	'5'	tenths digit
18	'3'	hundredths digit
19	'7'	thousandths digit

---

## Deleting a previous measurement record

The ProPanel-RF has the capability of transmitting a “delete previous measurement” signal by pressing the F2 key on the digital display. This causes the text “DEL” to be displayed instead of a position. This can be used to indicate that the previously recorded entry in a file needs to be removed.

## Operation

The following examples demonstrate how to configure various parameters of the ProPanel-RF receiver system. <ENTER> is the enter key on the PC. If an invalid command letter is entered, the receiver will provide the following response:

*Use t, s, o, d, v, b, m or e.  
Upper case to edit, lower case to view.*

### System ID

To display the current system ID type in:  
s<ENTER>

The receiver responds with:

System = < > **(Factory Default = 0)**

To change the system ID to 21, type:  
S21<ENTER>

The receiver responds with:

System now = 21

### Output Mode

To display the current output mode (from default), type in:  
o<ENTER>

The receiver responds with:

Output Mode = < > **(Factory Default = 3)**

To change the output mode to 4, type:  
O4<ENTER>

The receiver responds with:

Output Mode now = 4

---

## Delimiter Character

To display the current delimiter character (from default), type in:  
d<ENTER>

The receiver responds with:

Delimiter = < > **(Factory Default = <space>)**

To change the delimiter to a tab character, type:

D<TAB><ENTER> Where <TAB> = the PC tab key.

The receiver responds with:

Delimiter now = <tab>

## Echo Mode

To display the current echo mode (from default), type in:  
e<ENTER>

The receiver responds with:

Echo mode < > **(Factory Default = on)**

To change the echo mode to off, type:

E0<ENTER> Use 0 (zero) for off and 1 for on

The receiver responds with:

Echo mode off

## Record Start Marker

To display the current record start marker status (from default), type in:  
m<ENTER>

The receiver responds with:

Marker mode < > **(Factory Default = off)**

To change the record start marker mode to on, type:

M1<ENTER> Use 0 (zero) for off and 1 for on

The receiver responds with:

Marker mode on

## Terminator Type

To display the current terminator type (from default), type in:  
t<ENTER>

The receiver responds with:

Terminator = < > () **(Factory Default = <CR/LF> (0))**

To change the terminator mode to CR only (1), type:

T1<ENTER> Use 0 (zero) for CR/LF and 1 for CR only

The receiver responds with:

Terminator now = <CR> (1)

---

## Baud Rate

To display the current baud rate (from default), type in:

b<ENTER>

The receiver responds with:

Baud rate = **(Factory Default = 9600)**

To change the baud rate to 19200, type:

B19200<ENTER>

The receiver responds with:

Baud rate will be = 19200

The baud rate change becomes effective 1 second after the command is issued to allow the change message to be sent at the old baud rate.

Available baud rates are:

2400  
4800  
9600  
19200  
38400  
57600  
115200

## Firmware Version ID

To display the current firmware version, type in:

v<ENTER> or V<ENTER>

The receiver responds with:

ProScale Receiver V1.xxx

Where xxx is the minor revision number.

## Invalid Command

If an invalid command letter is entered, the receiver will provide the following response:

Use t, s, o, d, v, b, m or e.

Upper case to edit, lower case to view.

---

## Defaulting the Receiver to Factory Values

In the event that the user wishes to restore the receiver to factory values, complete the following:

1. Remove the four screws from the bottom of the receiver and remove the top cover.
2. Locate and press the small pushbutton on the circuit board labeled DEFAULT.
3. The POWER LED will flash once to indicate that the factory parameters have been restored.
4. Replace the top cover and re-install the four bottom screws.

## Setting Receiver for Master Mode on the Serial Port

By default, the ProPanel-RF receiver is designed to operate as a slave device. In this mode, a standard serial cable is used to connect the unit to a PC for normal operation.

In some cases, it may be required to use the receiver as a master device to communicate with another electronic product. To help to facilitate this, the unit's transmit and receive pins on the DB-9 can be reversed via internal jumper settings.

To reverse the transmit and receive pins, complete the following:

1. Remove the four screws from the bottom of the receiver and remove the top cover.
2. Move jumper blocks on JP3 and JP4 from pins 1 and 2 to pins 2 and 3 on each jumper.
3. Replace the top cover and re-install the four bottom screws.

A male-male DB-9 serial cable may now be used or a standard male-female cable with a gender changer may be installed.

---

## Other Accurate Technology Products

### **ProScale Model 150**

General Purpose *ABS* systems with standard measuring ranges of 10 and 18 inches.

### **ProScale Model 250**

General Purpose *ABS* systems with seven standard measuring ranges from 1-20 feet.

### **Measurement Table Kits**

These kits include the necessary components to assemble your own custom built measuring table. Three sizes: 4, 8 and 10 feet.

### **ProTable**

Turnkey QC/QA measuring systems. Available in standard and custom designs to measure up to 20 feet.

### **ProStop II**

A complete digital stop and fence system for chop saws, radial arm saws, miter saws or any application where a moving stop with a fixed back fence is needed.

### **ProStand**

Optical measuring, cataloging and set-up system for moulder and tenoners cutterheads.

### **ProSet**

A ProScale designed specifically for moulders. Measuring range of 250mm.

### **ProKits**

Pre-Engineered custom kits for popular woodworking machinery such as Panel Saws, Table Saws and Wide Belt Sanders.

### **ProMUX & Pro-RF**

Data acquisition and multiplexing systems. 1, 3 or 8 inputs; RS232, RS422 & 2-way wireless communication output protocols.

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