
ON/OFF

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

(Programming Parameter Pr8. Factory default set to 15 minutes.)

Battery voltage is displayed by pressing and holding the **ON/OFF** key for 5 seconds while display is turned on.

CAUTION: Pressing and holding the ON/OFF and MODE key for 10 seconds while the display is turned off will perform a full segment LCD test AND re-set all programming parameters to factory defaults

MODE

The digital display can show measurement information in Imperial or Metric. To change the current 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) (if enabled by **Programming Parameter Pr6**) and metric (mm or cm based on setting of **Programming Parameter Pr5**).

When the display is in a decimal mode (mm, cm or in) it will auto-range to the next resolution if the value is displayable in the next range. This allows the display to be used with Mitutoyo Digimatic® products in inch mode or different resolutions other than 2 decimal places.

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 an additional 1/64th of an inch measurement. ie. 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.

When the measurement is greater than $\pm 99 \frac{63}{64}$ inches, a **+100** or **+200** will show in the upper right portion of the LCD to indicate this amount must be added to the displayed reading. ie: if the measurement is $154 \frac{5}{8}$ inches, $54 \frac{5}{8}$ and **+100** will be displayed on the LCD. If the measurement is $-307 \frac{23}{64}$ inches $- 7 \frac{23}{64}$, **+100** and **+200** will be displayed on the LCD.

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.**)

+ , 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. **(See Programming Parameter Pr3)**

Digital 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 **+**, **-** and **0** keys will not change the displayed position. On Displays with an auxiliary keypad: ABS and INC modes have independent lock operations. **(See Programming Parameter Pr3. Factory default is Enabled.)**

Segment Offset Adjustment

For scales that are longer than 430mm (17 inches), multiple scale pattern segments are installed end-to-end on the aluminum extrusion. This provides a quasi-absolute measurement capability in which the readhead can calculate its position on any individual scale segment but cannot determine which particular segment it is on. To solve this problem, the Digital Display tracks which scale segment the readhead is on by detecting the “splice” between one segment and adjacent segments.

In certain situations, the crossing from one segment to another may not be detected by the display. This may occur if the readhead is disconnected from the digital display and then moved along the scale to another segment. It may also occur if the readhead is moved too quickly between two segments. (Maximum slew rate is 400mm/sec, 15in/sec)

If the segment tracking count is incorrect because of one of the above situations, the user can re-adjust the display to correct the error. This adjustment is referred to as the *Segment Offset Adjustment*.

To add one segment value (430.08mm) to the displayed value, hold the **MODE** key and then momentarily press the **+** key. The displayed position will increase by 430.08mm (16.933 inches). To subtract one encoder segment from the displayed value, press and hold the **MODE** key and then momentarily press the **-** key. The displayed position will decrease by 430.08mm.

(See Programming Parameter Pr1 and *SCALES* in Section 1 of this manual for additional information. Factory Default is set to Enable this function.)

Offset Addition

Offset addition allows the user to preset up to 3 different distances that are then added to the Digital Displays position when selected. This allows the user to quickly switch measurement modes from one reference point to another such as in the case of inside and outside measurements on ProPanel or multiple stations on a vertical panel saw.

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 addition. Offset 2 is the ABS position with parameter Pr11 (Offset Addition 1) 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.

(See Programming Parameters 9, 10, 11, 12 and 13. Factory default is *Disabled*.)

Limit Mode

The digital display will show either “ **LL** “ for Low 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. Display toggles between current position display and "LL" or "UL". The position is shown for 2 seconds and the "LL" or "UL" is shown for 2 seconds. This continues as long as a limit has been exceeded. Limit monitoring is always active, even in programming mode.

Numerous Programming parameters, including [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 [MODE](#) of display to mm or cm. ie These parameter values take on the unit of measurement [MODE](#) (mm, cm or inches) active when programming is entered.

Scaling

All General Purpose Digital Displays have the ability to “scale” the actual measurement. This function is useful when the actual measurement must be multiplied or divided before being displayed. **Care should be taken when using this function since invoking it will cause the unit to display a reading different than the actual measured or traversed value.**

This function is set using **Programming Parameter Pr7. The Factory Default is set to 1.000 - No Scaling**

Changing the Batteries

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

Surface Mount Displays: remove the screws in the upper right and lower left corners. Pull the cover off. Remove the old batteries. Reinstall new AA Alkaline batteries, noting the proper orientation. Replace the cover and tighten the screws.

CAUTION: DO NOT BEND BATTERY CLIPS!

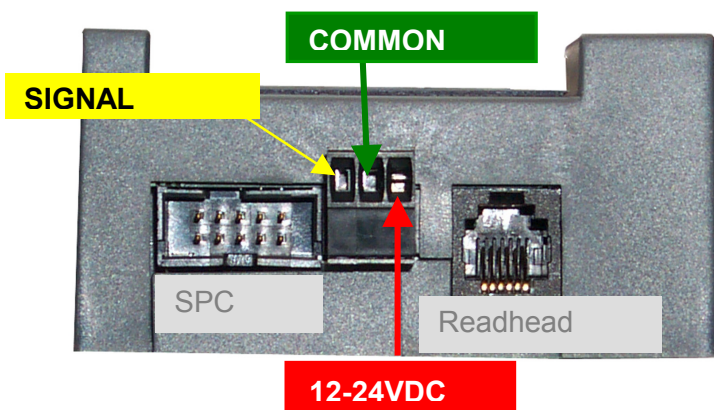
THESE CLIPS ARE DESIGNED TO BE LOOSE WHEN THE CASE IS OPEN AND WILL COMPRESS AND SECURE THE BATTERIES IN PLACE WHEN THE CASES ARE SCREWED TOGETHER.

Panel Mount Displays: Remove and replace 2D batteries noting proper orientation.

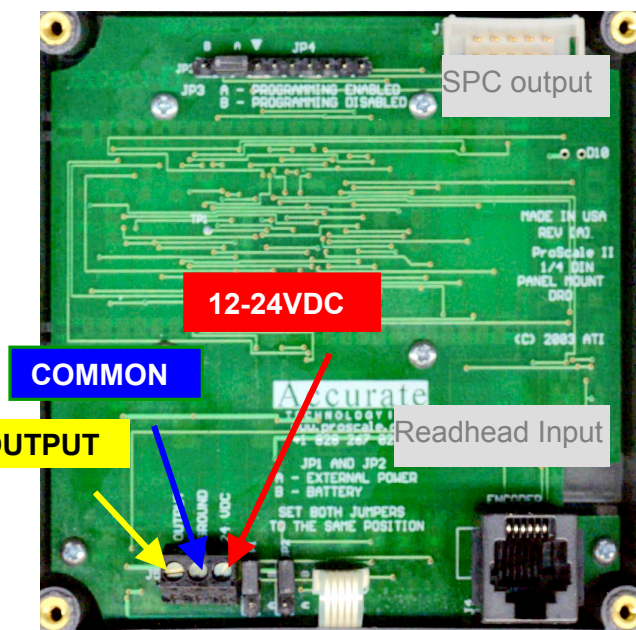
24VDC Operation

The 24VDC Digital Displays have some additional functions that are not available on battery powered displays.

**The 24VDC displays are designed to run on DC voltage ONLY.
DO NOT ATTEMPT TO OPERATE THESE DISPLAYS USING AC VOLTAGE**



Surface Mount Above,
Panel Mount Right



Limit/Monitor Signal Output

This function is available on 24VDC powered Digital Displays ONLY.

A connector provides a solid-state output (.1A / 30 VDC) that can be configured to activate on either a position drift (MONitor) condition or a measurement limit (LIMIT) error. The output can be configured for normally open (N/O, not conducting to ground) or normally closed (N/C, conducting to ground). Although the Digital Display LCD flashes when either a position drift (MONitor) condition or a measurement limit (LIMIT) error is encountered, the output signal only changes state once for out of limit condition and then toggles back when an in limit condition is restored.

For additional programming information see [Limit Mode](#) above and [MONitor Mode](#) below.

Caution: These functions are active during Display Programming. If their parameters are changed during programming the output signal could become active.

(See Programming Parameters 9, 14 and 15. Factory default is MONitor, N/O.)

Backlighting

This function is available on 24VDC powered Digital Displays ONLY.

LCD backlighting can be configured to always remain OFF, to always remain ON or to come on when any key is pressed and remain on for 3, 7 or 15 seconds.

(See Programming Parameter 22. Factory default is on for 3 seconds.)

Auxiliary Keypad



As seen on the Panel Mount Display



As seen on the Surface Mount Display

The Auxiliary Keypad is found only on Digital Displays that are Fully Programmable (**See Programming Parameter 9. Factory default is all keys enabled.**)

ABS - INC

The Digital 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 a current position on the display referenced from a fixed or known position such as a saw blade, or stop. The **INC** measurement setting is designed to take relative distance measurements from one arbitrary point to another. The systems operate independently allowing separate position offsets to be programmed. The **ABS** position of the measuring system is not lost when using the **INC** settings.

ABS Mode – The ProScale 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 (i.e. sawblade, stop, origin etc.) 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 approximately 3-4 seconds.

HOLD

The Digital 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.