Electronic Indicator

Operating Manual Backlight Analog Display

- Analog Visual Display
- Incremental Measuring Mode
- SPC Cables USB, MTI, RS232
- Measuring System in English or Metric
- Travel Reverse
- Green Backlight
- Yellow Tolerance Warning Backlight
- Red Out-of-tolerance Warning Backlight
- User-adjustable Backlight Brightness
- T.I.R. with Low & High Storage Recall
- Includes Single Gage Simple Data Collection (One Indicator Per Computer)
- USB/AC Power Cable
- Floating Zero
- Programmable Lock Combination
- User Tolerance Settings (high & low)
- Up to 4 User Changeable Resolutions
- Inch/Metric Display Conversion
- Maximum Reading Hold
- Display/Freeze Reading Hold
- Minimum Reading Hold
- Absolute/Preset Measuring Mode
- Large LCD Display

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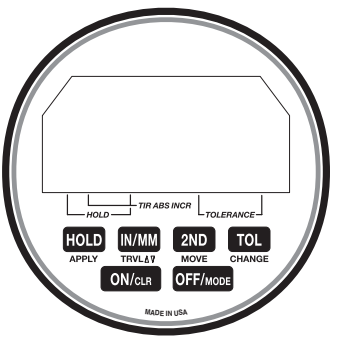
POWER SOURCE

Data I/O Connector
Power is provided through the data I/O connector. The power cable that is included can be used on a USB port or a 110 volt outlet. For special fixturing or applications where the indicator is integrated with another piece of equipment, a ripple-free 5 VDC regulated voltage source is required.

BUTTON FUNCTIONS

Key	Function Controlled
OFF/MODE	*Off* – turns indicator off ***MODE*** – controls absolute numbers & display setup
ON/CLR	*On* – turns indicator on ***CLR*** – resets the ***Lock Toggle***, ***Data I/O Type***, ***gage resolution***, and ***Display*** setup mode
HOLD	Allows you to hold the value on the display according to the specified Mode (***MAX***, ***MIN***, ***FRZ***)
IN/MM	Controls the display units (default is English)
2ND	Controls the ***Lock Toggle***, ***Data I/O Type, gage resolution***, ***Travel Reverse*** and ***Display*** setup mode
TOL	Controls ***Low***, ***High*** and ***On*** tolerance settings



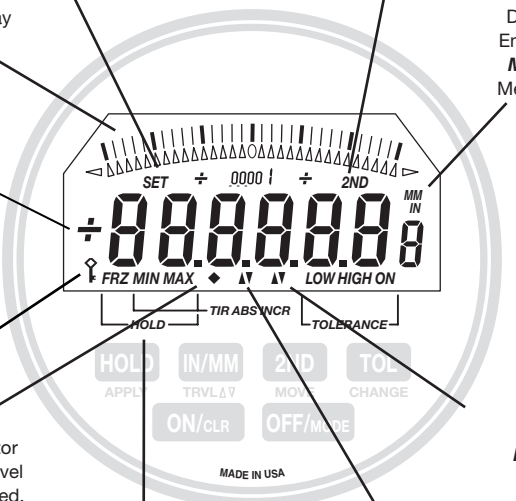
SUMMARY CHART FOR ANALOG BUTTON ACTIONS

Button actions occur on the press of the button in most cases. Some button presses will have the action occur on the release of the button press. For example, when the 'ON/CLR' button is used to clear the display, the action is to happen on the release of the button. When the 'ON/CLR' button is used as the 2nd function in a sequence of button pushes, the action can be on the press of the button. Whenever a button press requires a continuous press to scroll through some selection process, the action of the button is on the release of the button.

BUTTON	FUNCTION			
	PRIMARY	SUBSIDIARY	2ND FUNCTION	3RD FUNCTION
HOLD	• Toggle on/off	• Select hold type (MAX, MIN, FRZ) press and hold to step through selection • Apply function	• Unlocks brightness settings. Use CHANGE to step through selection. • Apply function	• Enter resolution select process* • (2ND, ON/CLR, HOLD)
IN/MM	• Toggles between inches, millimeters		• Toggles travel reverse (normal/ reverse)	• Resets to factory default settings • (2ND, ON/CLR, IN/MM)
2ND	• Enables 2ND functions	• Move function		• Verify data output • (2ND, ON/CLR, 2ND)
TOL	• Toggles tolerance on or off	• Select high or low to view or set numbers* • Change function	• Enter preset setting process*	• Toggles lock on and off; press and release (2ND, ON/ CLR, TOL) • Enters user lock combination setting mode (press and hold to access setting mode)*
ON/CLR	• Turn gage on	• Clears/resets display to '0' or spindle position, or 'abs' number or 'abs' +/- spindle position	• Enables 3RD function	
OFF/ MODE	• Turns gage off	• Select measurement mode (INCR, ABS, TIR) press and hold to step through selection		• Enter display selection style* • (2ND, ON/CLR, OFF/MODE)

** Note: apply, move and change are automatically active when in preset, lock and tolerance setting modes. Apply and change are automatically active when in resolution set mode.*

DISPLAY-OPERATING PROMPTS & CONDITIONS



Indicator is in preset number setting function for ABS or tolerance high or low preset numbers

Indicator ready for 2nd or 3rd function key entry sequences

Analog display

Displays ***IN*** for English (inch), or ***MM*** for Metric Measuring Units.

Negative reading. No sign is displayed for positive readings.

Features and presets numbers are locked

For Total Indicator Runout (***TIR***), travel direction is ignored. Peak (***MAX***) and valley (***MIN***) values are available.

Menu selection items under hold or tolerance areas

Travel reversed, display counts down with spindle movement for ***INCR*** and ***ABS*** measurement modes.

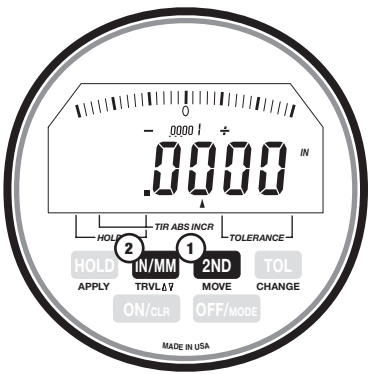
Display counts up with inward spindle movement for ***INCR*** and ***ABS*** measurement modes.

OPERATING INSTRUCTIONS

Power On/Off
To turn the unit on, press ***ON/CLR***. To turn off, press ***OFF/MODE***.

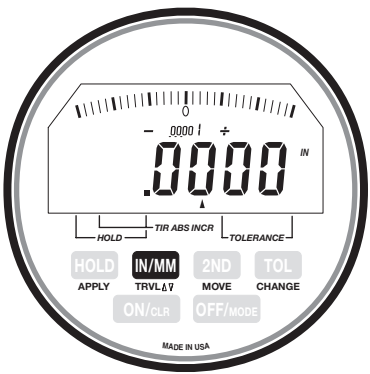
Travel Reverse Toggle
To change count direction:
Press ***2ND*** button, then press the ***IN/MM*** button.
Note: When arrow is pointed down ▼, the display counts down with inward spindle movement for ***INCR*** and ***ABS***.

When the arrow is pointed up ▲, display counts up with inward spindle movement. For most applications this is the normal setting.



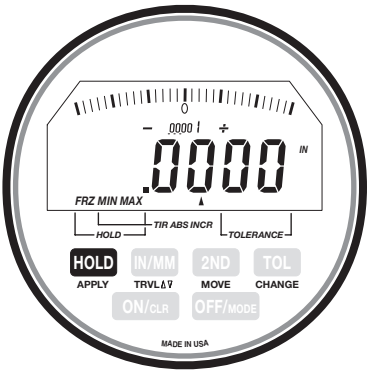
Change Units
To change the display units, press the ***IN/MM*** button.

Default unit of measure is set at the factory for English or metric scales.



OPERATING INSTRUCTIONS

Hold Mode
Allows you to hold the value on the display according to the specified mode.



Press ***HOLD*** to toggle hold mode on and off.

MAX – Holds and displays the highest reading attained.

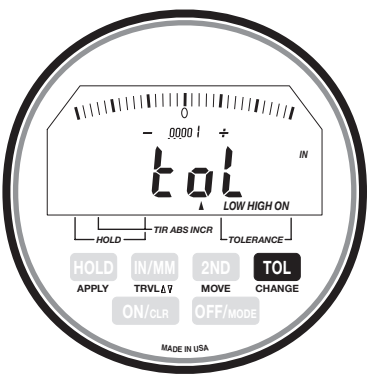
MIN – Holds and displays the lowest reading attained.

FRZ – Holds and displays the reading displayed when ***HOLD*** is engaged.

To select type of ***HOLD*** (***MAX***, ***MIN***, ***FRZ***): Press ***HOLD*** until desired feature is flashing, then release ***HOLD.***

Note: Pressing ***ON/CLR*** button resets indicator to spindle position except in FRZ; resets to zero

Tolerance On/Off
Press ***TOL*** to toggle tolerance mode on and off. If no tolerances are programmed into the gage, then ***tol*** is displayed to indicate an invalid tolerance setting and the ***HIGH*** and/or ***LOW*** icons flash on and off.



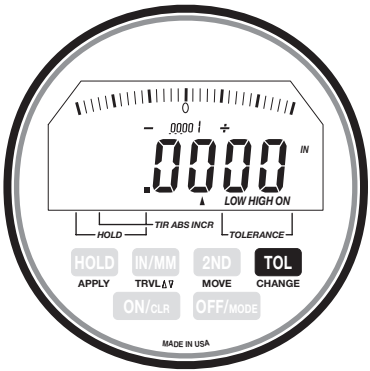
When the tolerance settings are incorrect (high, low, or both) the corresponding icon or icons will flash.

OPERATING INSTRUCTIONS

Tolerance Settings
Continuously press the ***TOL*** button to activate the tolerance menu (***LOW***, ***HIGH***, ***ON***) and view the low and high tolerance settings.

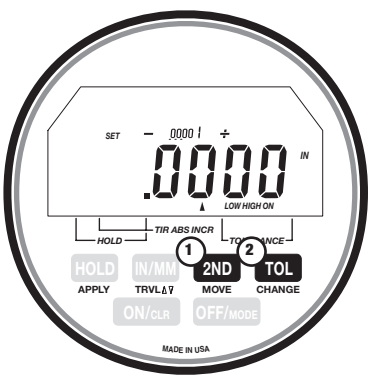
If no preset tolerance number is set into the gage then zero will be displayed.

When viewing low or high, that icon will flash.



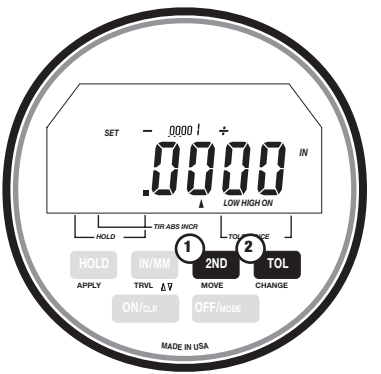
Set High Tolerance Number
While in tolerance mode, continuously press the ***TOL*** (***CHANGE***) button until the ***HIGH*** icon flashes, then release button. Press ***2ND*** button (***2ND*** icon should appear on the display). Press the ***TOL*** (***CHANGE***) button.

Use the secondary function buttons, ***CHANGE*** and ***MOVE,*** to set your tolerance setting. After you have set your high tolerance setting, press ***APPLY*** to store numbers to memory.



OPERATING INSTRUCTIONS

Set Low Tolerance Number
While in tolerance mode, continuously press the ***TOL*** (***CHANGE***) button until the ***LOW*** icon flashes, then release button. Press ***2ND*** button (***2ND*** icon should appear on the display). Press the ***TOL*** (***CHANGE***) button.



Use the secondary function buttons, ***CHANGE*** and ***MOVE,*** to set your tolerance setting. After you have set your low tolerance setting, press ***APPLY*** to store numbers to memory.

Note: once high and low tolerances are set, the LCD will turn yellow when the reading value is more than 80% of the high or low set tolerance (if yellow warning feature is turned on), and will turn red when readings are out of tolerance.

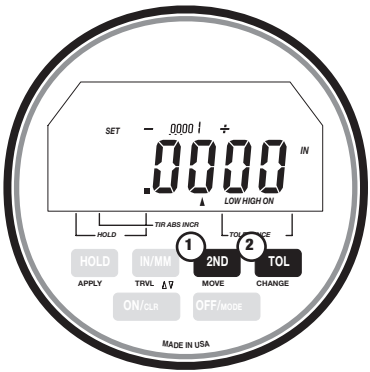
The tolerance function must be programmed and turned on for the LCD to turn red.

Green and red LCD brightness levels can be adjusted. Yellow warning brightness is based on the brightness of the programmed green and red LCD settings. The yellow warning can be turned on or off.

Operator can program the color in this sequence: green, red and then yellow.

OPERATING INSTRUCTIONS

To change brightness level of the LCD backlight and turn yellow warning on/off: Press and release the ***2ND*** button. Press and release the ***HOLD*** button. Use the ***CHANGE (TOL)*** button to scroll through green brightness levels. Use the ***APPLY (HOLD)*** button to set the green brightness level. Use the ***CHANGE (TOL)*** button to scroll through red brightness levels. Use the ***APPLY (HOLD)*** button to set the red brightness level. Use the ***CHANGE (TOL)*** button to turn the yellow "Warn" on or off. Use the ***APPLY (HOLD)*** button to set ON or OFF.



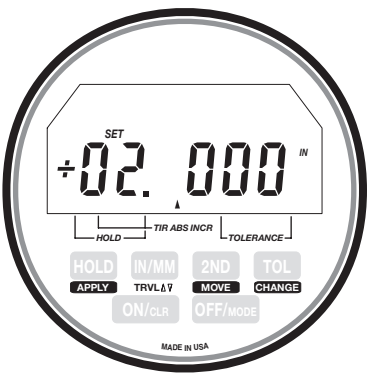
OPERATING INSTRUCTIONS

Set Absolute Number
Continuously press the ***OFF/MODE*** button. When the icon on the LCD flashes above the ***ABS*** lettering, release the ***OFF/MODE*** button. If no preset number is stored in indicator ***ABS*** will show on display.

To change to absolute number (preset number), press ***2ND*** button; ***2ND*** icon should appear on the display. Press the ***TOL*** (***CHANGE***) button.

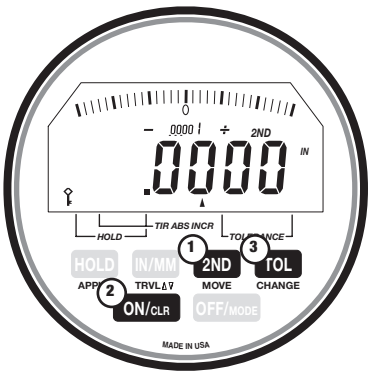
Use the secondary function buttons, ***CHANGE*** and ***MOVE***, to set your absolute number.
Press ***MOVE*** until the ***+/-*** or digit to be set is blinking.

Press the ***CHANGE*** button to reverse the ***+/-*** sign or change the value of the blinking digit. Repeat until the desired number is entered. Press ***APPLY*** to store absolute number to memory.



OPERATING INSTRUCTIONS

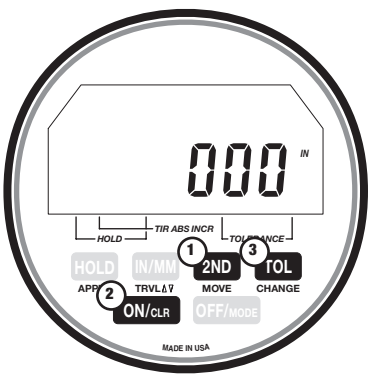
Lock Toggle
When the ***LOCK*** is on, all of the setting modes are disabled, and all 2nd and 3rd functions are disabled except the lock/ unlock sequence.



Press the ***2ND*** button (***2ND*** icon should appear on the display). Press ***ON/CLR***. Press ***TOL***. A key symbol will appear on the display when features are locked.

To unlock, repeat button sequence.

Lock Combination
Press the ***2ND*** button (***2ND*** icon should appear on the display), then press ***ON/CLR***. Continuously press ***TOL*** until ***000*** appears on the display.



Use the ***CHANGE*** and ***MOVE*** button to enter your lock combination. After you have set your 3 digit lock combination press ***APPLY***. A key symbol will appear on the display and your 3 digit combination is stored in memory.

WARNING: To change functions after the indicator has been locked with a combination, the correct combination must be applied.

To unlock, repeat button sequence and enter same 3 digit combination used to set lock.

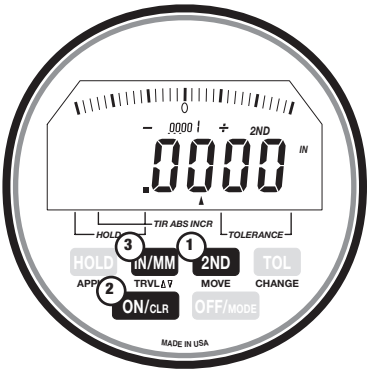
Please contact the factory if the Lock Combination is lost.

OPERATING INSTRUCTIONS

Reset to Factory Defaults
This will set all features and functions back to the factory default settings.

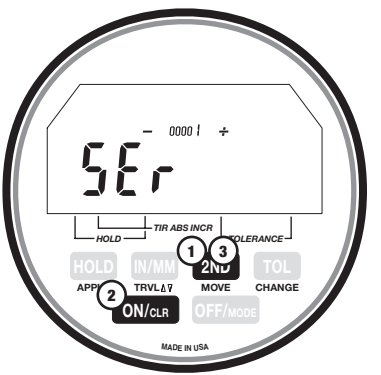
Press the ***2ND*** button (***2ND*** icon should appear on the display), followed by ***ON/CLR***, then press ***IN/MM***.

Note: Factory defaults cannot be reset if the ***LOCK*** feature is on.



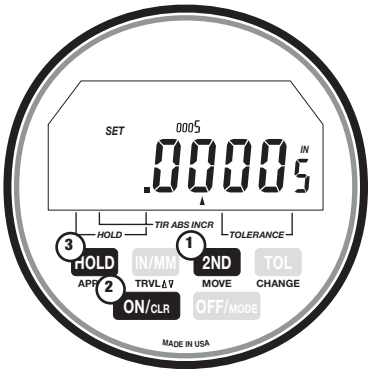
Verify Data I/O Type
To view the Data I/O Type Output, press the ***2ND*** button. The ***2ND*** icon will appear on the display. Press ***ON/CLR***. Press ***2ND***. Format information is displayed on the LCD. ***USB***, ***SER***, ***MTI***, or ***BIPASS*** will appear on the LCD.

To exit: Repeat button sequence.



OPERATING INSTRUCTIONS

Set Gage Resolution
For the change resolution feature: Press ***2ND***, press ***ON/CLR***, then press ***HOLD***.



After that, each press of the ***CHANGE*** Button (***TOL***) steps through the available resolution options: ***.001˝***, ***.0005˝***, ***.0001˝*** or ***.00005˝*** *

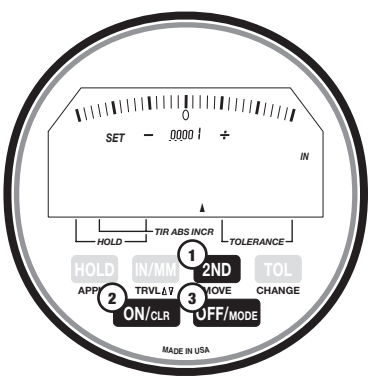
*Note: Only resolutions coarser than resolution of purchased indicator are available.

Analog graduations are set to match gage resolution. Press the ***APPLY*** button to store the resolution setting. Display returns to measuring mode at desired resolution, but does not change displayed value.

Display Setup Mode
To change the display configuration, press the ***2ND*** button, followed by the ***ON/CLR*** button. Then press the ***OFF/MODE*** button to enter the display configuration setting mode.

The whole display flashes.

Press ***CHANGE*** to cycle through the display options and choose ***APPLY*** to save the current display configuration. There are five display options. For example, the analog display can be turned off or the numbers can be turned off.



OPERATING INSTRUCTIONS

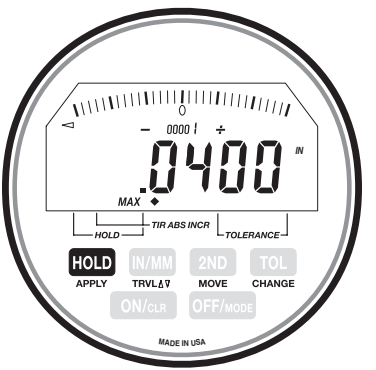
TIR Mode
Total Indicator Runout (***TIR***) mode ignores travel direction, instead measuring the difference between peak and valley (***MAX*** and ***MIN***) values.

To enter TIR Mode, continuously press the ***OFF/MODE*** button until the diamond icon flashes above the TIR function, then release the ***OFF/MODE*** button.

In TIR mode, the Freeze (***FRZ***) is the only hold function available.

To view the Peak (***MAX***) Value or the Valley (***MIN***) Value, use the ***HOLD*** button. Press ***HOLD*** button down until the ***MIN*** or ***MAX*** is displayed.

The difference between the ***MIN*** and ***MAX*** Values equals the TIR Value.



CUSTOM APPLICATIONS

Custom LCDs and graphics can be provided for almost any application. We can help you design a gage for your exacting requirements.

Keypads and features can be customized to meet most needs. For example, a gage can be programmed for T.I.R. only, or a gage can be programmed so only selected features are available.

With our programmable software and flexible microchip, the possibilities are limited only by your imagination.

Custom hardware is available to fit your specifications. For example, a gage can be made without a return spring or with a custom spring. Special length stems, threaded stems, backs, and contact points, are also available.

Backlight Indicators are available in the following travels and resolutions:

Travel	Resolution
1″	.0001″
1″	.00005″
2″	.0005″
2″	.0001″
4″	.0005″
4″	.0001″