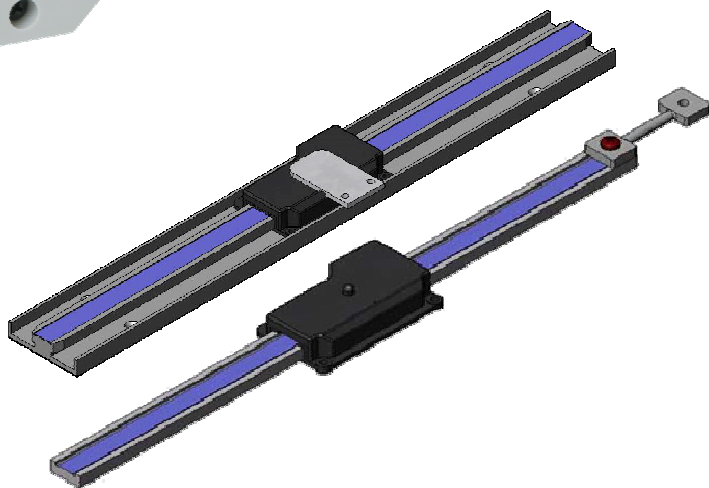


Accurate

TECHNOLOGY INC.

Linear Digital Measuring Systems

DigiScale™



Models 18 & 28

User Manual

WARRANTY

Accurate Technology, Inc. warrants the DigiScale Models 18 & 28 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.

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SAFETY WARNING

**Before installing DigiScale on any machinery:
Turn off machine and disconnect power.**

SAFETY WARNING

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Table of Contents

SECTION 1	GENERAL INFORMATION.....	6
INTRODUCTION.....		6
ABOUT THIS MANUAL.....		6
SPECIFICATIONS.....		6
SPECIFICATIONS.....		7
ABOUT DIGISCALE.....		8
Scale.....		8
Encoder.....		8
Digital Readouts.....		8
SECTION 2	INSTALLATION.....	9
MODEL 18.....		9
MODEL 28.....		11
FREQUENTLY ASKED QUESTIONS.....		13
SECTION 3	DIGI READOUT.....	14
MOUNTING.....		14
THE LCD.....		15
CHANGING THE BATTERIES.....		15
CHANGING THE BATTERIES.....		16
CALIBRATION.....		16
CIRCUIT BOARD JUMPERS.....		17
OPERATION.....		18
Readout Keys.....		18
TIMING.....		18
ON/OFF.....		18
UNITS KEY.....		18
+ AND - KEYS.....		19
DATUM KEY.....		19
Readout Functions.....		19
REVERSE READINGS.....		19
INCREMENTAL MEASUREMENTS.....		20
KEY LOCK.....		21
RESOLUTION.....		21
RESTORE READOUT TO FACTORY SETTINGS.....		21
PROGRAMMING.....		22
Programming Parameters.....		23
Pr 1 – Datum Key Value.....		23
Pr 2 – Reading Direction.....		23
Pr 3 – Key Lockout.....		23
Pr 4 – Resolution.....		23

SECTION 4	COMPACT READOUT.....	24
MOUNTING		24
Surface Mount Configuration.....		24
Panel Mount Configuration.....		25
THE LCD		26
CHANGING THE BATTERY		26
CALIBRATION		26
CIRCUIT BOARD JUMPERS.....		27
OPERATION		28
Readout Keys.....		28
TIMING.....		28
IN/MM KEY.....		29
+ AND - KEYS.....		29
DATUM KEY.....		30
Readout Functions.....		31
REVERSE READINGS.....		31
INCREMENTAL MEASUREMENTS.....		31
KEY LOCK.....		32
RESOLUTION.....		32
RESTORE READOUT TO FACTORY SETTINGS.....		32
PROGRAMMING		33
Programming Parameters.....		34
Pr 1 – Datum Key Value.....		34
Pr 2 – Reading Direction.....		34
Pr 3 – Key Lockout.....		34
Pr 4 – Resolution.....		34
ERROR CODES.....		35

Introduction

DigiScale is a general purpose linear measuring system. It consists of three major parts: a **SCALE**, an **ENCODER** and a **DIGITAL READOUT**.

DigiScale is an ideal choice for most measuring requirements up to 60 inches where affordable digital precision (better than a tape measure) is desired. Because DigiScale shows the exact measurement on its readout, it eliminates the ambiguity and mistakes involved when reading and interpreting tape measures, scales & pointer, or shaft encoders.

Because DigiScale is a solid-state electronic device there's very little to wear out. The encoder and scale are designed to withstand shop dirt, dust, and other airborne contaminants. With normal care, DigiScale will last for years.

About This Manual

- This manual includes theory and **INSTALLATION** information for DigiScale Models 18 & 28 Scales and Encoders.
- This manual includes **OPERATION** information for the **Digi** and the **Compact** Readouts used with DigiScale systems.



Digi Readout Part # 700-1600-D55
With Firmware Version **d 2.xxx & higher**
(Firmware version is displayed on power-up)

2AA alkaline batteries
Side input



Compact Readout Part # 700-1600-710
With Firmware Version **b 2.xxx & higher**
*(Press and hold the **DATUM** key for 7 seconds to display the firmware version.)*

1 CR123 Lithium battery
Rear input
Surface or panel mount

Specifications

Measuring Range: *

Model 18 up to 10 inches
Model 28 up to 60 inches

Accuracy:

Model 18 ± .010 inches
Model 28 ± .012 Inches

Readout Resolution .1inch .1mm or
.01inch .01mm or
.001inch .01mm or
1/16, 1/32 or 1/64 inch

Repeatability: .001inch or .01mm

Readout Range: + 999.999 in; + 399 63/64 in; + 9999.99 mm

Operating Power:

Digi Readout 2 AA Alkaline Batteries
Compact Readout 1 CR123 Lithium Battery

Operating Temp: 40 to 110°F

Slew Rate: 60 inches/second

Encoder cable: 72 inch

*** MEASUREMENT range is approximately 4 inches *shorter* than the PHYSICAL length of the aluminum scale extrusion.**

About DigiScale

All DigiScale systems consist of a **SCALE** (or track), an **ENCODER**, (or readhead) and a **DIGITAL READOUT** (DRO).

Scale



The scale consists of a series of conductive patterns bonded to an aluminum extrusion. The Model 18 Scale is .765 inches wide and comes in measuring lengths up to 10 inches long. The Model 28 Scale is 2.02 inches wide and comes in measuring lengths up to 60 inches.

All Scales are approximately 4 inches longer in their physical length than their measuring range.

Encoder

The DigiScale encoder contains electronic circuitry that transmits and receives signals to and from the scale using a patented technology called inductive coupling. This data is then sent to the digital readout where it can be displayed in millimeters, inches, or fractions.

Multiple encoders, each connected to a digital readout, may be used on the same scale simultaneously.

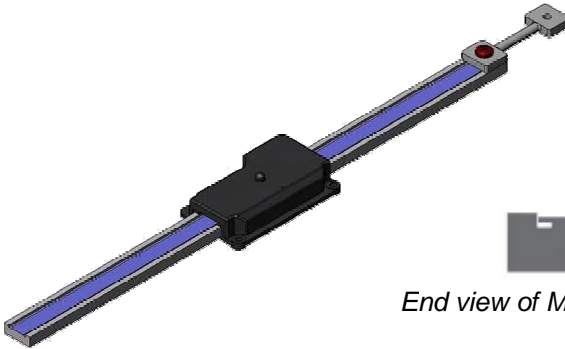
Models 18 & 28 encoders have black housings with a cable exiting from one corner. The encoder orientation on the scale may be reversed to reverse the direction of the measurement readings, or they may be reversed through programming in the digital readout.

All Models 18 & 28 encoders are supplied with a 6 foot (72 inch) cable.



Digital Readouts

DigiScale Models 18 & 28 can be used with either of two Digital Readouts. Refer to [SECTION 3](#) and [SECTION 4](#) of this manual for information about programming, installation and operation of these readouts.



End view of Model 18 DigiScale

Model 18

The Model 18 can be used in many different measurement applications, and with numerous types of equipment. Therefore all installations will be a little different and it is the responsibility of the user to choose the bolts, screws, or other mounting hardware that provides a quality installation and optimum operation in their application.

Determine an appropriate mounting location and position for DigiScale in your measuring application. Most installations of the Model 18 will hold the encoder stationary and allow the scale to pass through the encoder during measurement. If you choose this installation proceed to Step 1.

However, the DigiScale will also operate correctly is the encoder is moved along the scale during measurements. If you choose this method, proceed directly to Step 2

Note: Never drill through the colored portion of the scale at any point over which the encoder will travel.

1. Stationary Encoder installation

Attach one end of the [Connector Link](#) to the scale using the included screw and fasten the other end of the connector link to the moving part of the measuring application or machine. Attach the encoder to a fixed point using three screws or bolts. Insure that the scale is properly aligned to pass through the encoder with the direction of motion of the moving part. Be sure connections are secure or inaccurate readings could result. Plug the encoder cable into the readout.



Connector Link

2. Stationary Scale installation

If your application is better suited for the scale to be held stationary and the encoder moved along it during a measurement, you should use the **Guide Clip** to *capture* the encoder and move it along the scale (see illustration).

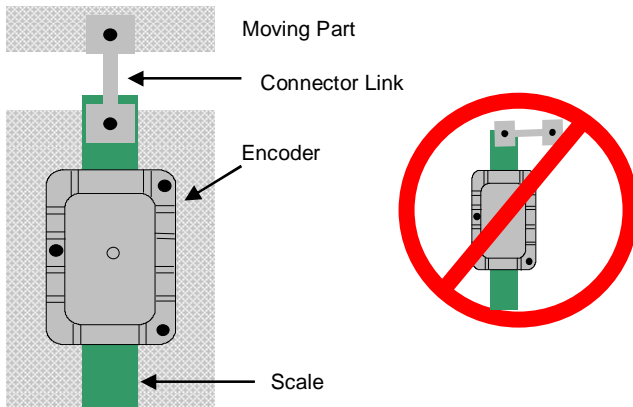
Attach the scale to a fixed point in your application using the included screw. Place the encoder on the scale. Attach the guide clip to a moving point in your application such that the slot on the underside of the clip engages the post on the top of the encoder and captures it's movement along the scale. The guide clip should exert some pressure on the encoder over the full range of travel as the two move as a single unit.

Insure the scale and encoder are properly aligned as the encoder is moved (the guide clip will compensate for slight misalignment in the direction perpendicular to movement). Adjust the scale alignment if necessary. Plug the encoder cable into the readout.

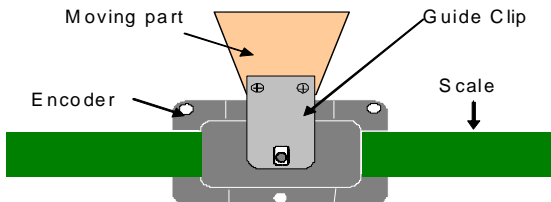


Guide Clip

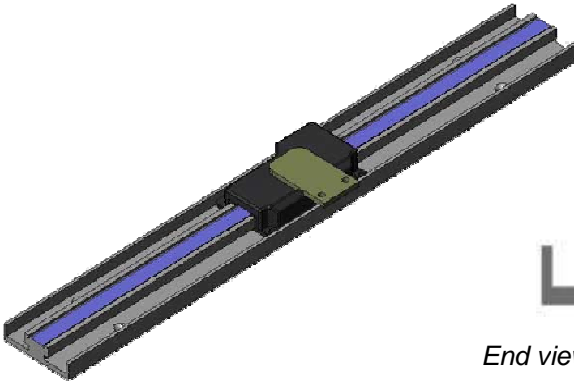
Refer to the Digital Readout Operation manual that accompanied your DigiScale.



Encoder stationary, Scale moving



Scale stationary, Encoder moving



End view of Model 28 DigiScale

Model 28

The Model 28 can be used in many different measurement applications, and with numerous types of equipment. Therefore all installations will be a little different and it is the responsibility of the user to choose the bolts, screws, or other mounting hardware that provides a quality installation and optimum operation in their application.

Determine an appropriate mounting location and position for DigiScale in your measuring application. Most installations of the Model 28 will hold the scale stationary as the encoder moves along it during measurement.

However, the DigiScale will also operate correctly if the scale is moved through the encoder during measurements; however this type of installation is not recommended for the Model 28.

Note: Never drill through the colored portion of the scale at any point over which the encoder will travel.

When installing the Model 28 you should use the [Guide Clip](#) to capture the encoder movement along the scale (see illustrations).

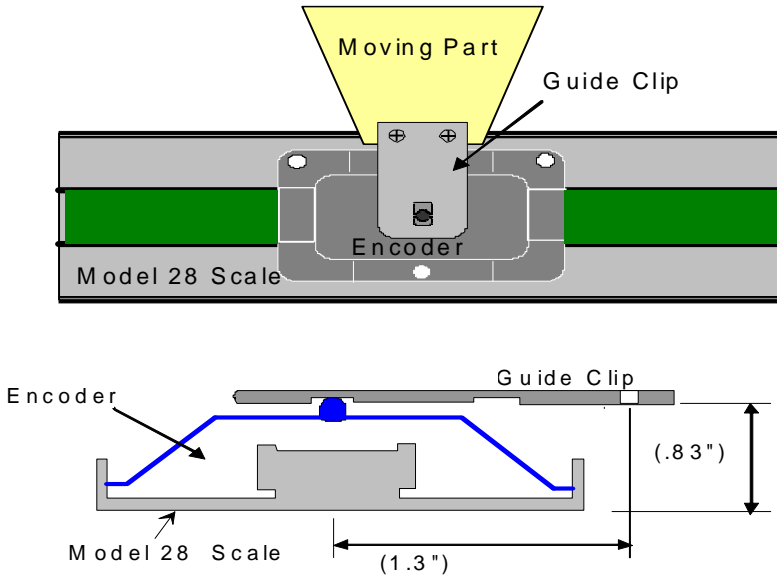
1. Attach the scale to a fixed point in your application using the included screws. Be sure the screw heads do not protrude above the surface of the extrusion. Place the encoder on the scale. Attach the guide clip to a moving point in your application such that the slot on the underside of the clip engages the post on the top of the encoder and captures its movement along the scale. The guide clip should exert some pressure on the encoder over the full range of travel as the two move as a single unit. Be sure the scale and encoder are properly aligned as the encoder is



Guide Clip

moved (the guide clip will compensate for slight misalignment in the direction perpendicular to movement). Adjust the scale alignment if necessary. Plug the encoder cable into the readout.

Refer to the Digital Readout **OPERATION** manual that accompanied your DigiScale.



Typical Model 28 Installation

Frequently Asked Questions

Can I mount the Scale/Encoder without the connector link/guide clip?

Yes. However, the connector link and guide clip serve to provide an accurate method of transferring the movement of the encoder or scale, while also absorbing any stresses that may occur. If they are not used, your system could be damaged and **the warranty could be voided.**

What does no Enc mean?

If the encoder is off the scale, or unplugged from the readout, a **no Enc** will appear on the readout. To clear the error:

1. Be sure the encoder is on the scale.
2. Plug the encoder into the readout.
3. Unplug the encoder from the readout for one second then reconnect it.

How do I calibrate my DigiScale?

There is no calibration available or necessary for the DigiScale. System accuracy will depend on the accuracy of the DigiScale Scale itself and the quality of the installation.



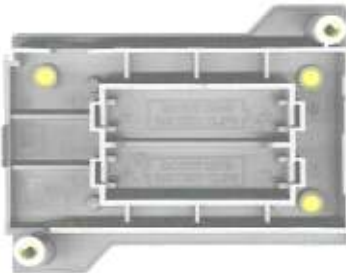
This Section includes information for:

Digital Readout, LCD, DIGI **Part Number: 700-1600-D55**
With Firmware Version d 2.xxx & higher
(Firmware version is displayed on power-up)

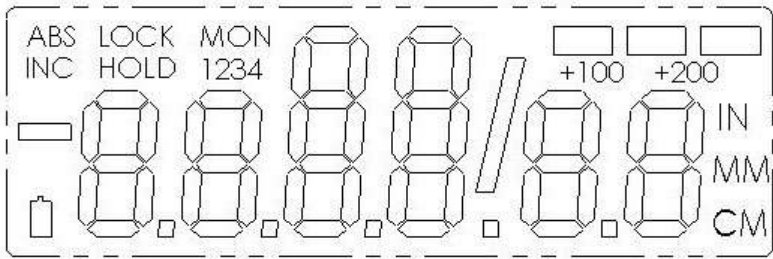
Mounting

The Readout may be mounted:

- Using Velcro or Double sided tape
- Drilling out the 3 holes from the inside of the case
- Using any of the six holes on the back of the case which may tapped for M2 or 4-40 screws.



The LCD



The above figure illustrates all the segments available on the Dig Readout. (Not all segments are used)

CAUTION

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



Changing the Batteries

A low battery indicator will appear in the lower left corner of the LCD. When battery voltage drops below approximately 2.6V the readout will turn itself off until the batteries are replaced.

To replace the battery remove the screws in the upper right and lower left corners. 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.

CAUTION: DO NOT BEND THE 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 CASE HALVES ARE SCREWED TOGETHER.

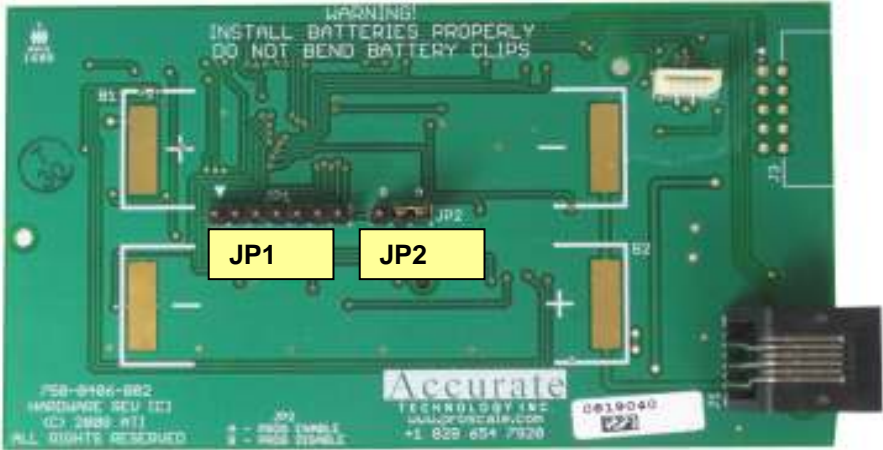


Calibration

There is no calibration available or necessary for the DIGI readout. System accuracy will depend on the accuracy of the DigiScale and the quality of the installation.

Circuit Board Jumpers

The Digi readout has several user configurable jumpers consisting of three pins and a 'shorting block or jumper'. The center of these three pins is 'Common'. One end pin is labeled **A** and the other end pin is labeled **B**.



JP1 **FACTORY USE ONLY**

JP2 **Programming Lockout**
Position **A**, Front Panel Programming is **ENABLED**
Position **B**, Front Panel Programming is **DISABLED**

Operation

Readout Keys



TIMING

The keys pictured above, are found on all Digi readouts, and some of them have multiple functions.

Timing, which is 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 shorter than 1 second. Whereas the term “*press and hold*” is used to describe a key press of longer than 1.5 seconds. As an 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 most of the key “*functions*” are executed on RELEASE, not press. This is important since some of the same keys execute different functions based on how long they are pressed and when they are released. These key operations, once tried will quickly become intuitive.

ON/OFF

Momentarily pressing the **ON/OFF** key will cause the readout to turn on or off. The Firmware Version of the readout is displayed on power-up when **ON/OFF** key is used. While the readout is on, if the encoder is not moved for 15 minutes, the readout will automatically turn itself off to conserve battery life. While it is off if the encoder is moved as little as .002in (.05mm), or the **ON/OFF** key is pressed, the readout will automatically turn itself back on with no loss of position.

UNITS KEY

The readout can display position information in decimal inches, fractions, or millimeters. To change the current display mode, momentarily press the **UNITS** key. With each key press the readout will cycle through decimal inches, fractional inches and millimeters.

When the readout is in 1/16 or 1/32 inch fraction mode, a series of “bars” in the upper right corner of the display, each representing 1/64th of an inch, may appear. (ie. When in 1/16 inch mode and three bars are showing, 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 measurement.) For

better resolution, switch to 1/32 or 1/64 mode. For the best resolution and accuracy switch to a decimal mode – inches or millimeters.



When the measurement is greater than 99 63/64 inches, a **+100** and/or **+200** will illuminate in the upper right portion of the display 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 be illuminated on the display. If the measurement is -307 23/64 inches, - 7 23/64, **+100** and **+200** will be illuminated on the display.

+ AND - KEYS

The **+** (plus) and **-** (minus) keys are used to change the currently displayed position to a different value.

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.

DATUM KEY

The **DATUM** key forces the readout to display a user programmed value.

*See Section 3: Programming, **Programming Parameter Pr1.***

NOTE: While the **DATUM** key can be used to simply “zero” the currently displayed value, it can also be programmed to force the readout to a preset value. This can be zero, or any other displayable value.

Readout Functions

REVERSE READINGS

Reverse readings means changing the direction of readings produced by moving the encoder. If the readout decrements (reduces or goes negative) when it should be incrementing (increasing or going positive), the readout will need to be re-programmed for your application.

*See Section 3: Programming, **Programming Parameter Pr2.***

INCREMENTAL MEASUREMENTS

The readout has two measurement modes, or indexes. One is referred to as **ABS** or Absolute, and the other as **INC**, or Incremental. The absolute measurement mode allows the operator to read the current position of the encoder referenced from a fixed or known position-usually zero.

The incremental mode allows the operator to make relative distance measurements from one arbitrary point to another. The absolute position of the DigiScale is not lost when using the incremental mode.

Absolute: The readout 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 encoder positions are related to the current ABS, or absolute system reference point.

Incremental: To enter the INC mode, press and hold the **UNITS** key for approximately 3 seconds. The **INC** symbol will appear in the upper left corner of the display. When the INC mode is entered the readout will display zero (0) or the last offset if one was entered, and may be changed by using the **+** or **-** keys to provide a different 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 **UNITS** key. The readout will again change to 0 (or the previously programmed offset). To return to the ABS mode, press and hold the **UNITS** key for approximately 3 seconds.

NOTES: when the readout is in incremental measuring mode the **UNITS** key no longer functions to change the measurement units displayed.

The absolute position of the DigiScale is not lost when using the incremental mode. When the readout is switched back to the absolute mode the readout reflects the current encoder position relative to your original calibrated absolute setting.

KEY LOCK

To activate the Key Lock function press and hold the **ON/OFF** key and then momentarily press the **UNITS** key. The word **L0CK** will appear in the upper left corner of the readout. When **L0CK** is displayed, the **+**, **DATUM** and **-** keys become inactive to prevent accidental changes of the (calibrated) current displayed position. To de-activate the Lock function, press and hold the **ON/OFF** key and then momentarily press the **UNITS** key.

NOTE: The Lock function can also be enabled/disabled through programming. This allows a more permanent Lock function since programming can be disabled with a hardware jumper inside the readout thus preventing any front panel programming changes.

See Section 3: Programming, Programming Parameter Pr3.

RESOLUTION

The readout can be configured to display measurements in any of three different resolutions.

1. Low– the resolution is: .1in or .1mm.
2. Normal– the resolution is: .01in or .01mm.
3. High– the resolution is: .001in or .01mm

The display of fractions remains the same for all settings: 1/16, 1/32 & 1/64

See Section 3: Programming, Programming Parameter Pr4.

RESTORE READOUT TO FACTORY SETTINGS

Press and hold the **ON/OFF** and **UNITS** keys for 10 seconds with readout power turned off. This will perform a full segment LCD test, display the current firmware version, and reset all programming parameters to factory defaults.

Programming

Several functions of the Digi readout are user programmable. The following describes what features and functions are available and how to change the factory defaults to customize your DigiScale system.

To enter Programming Mode:

1. Press and hold the **UNITS** key then momentarily press the **DATUM** key.
2. The LCD will briefly display: **PG on** (Programming On), then **Pr 1**, (indicating Programming Parameter #1)
3. Release the **UNITS** key
4. The value stored in **Pr1** is displayed.



Once in the Programming Mode:

Moving up parameter list: Momentarily press the **UNITS** key to advance through the Programming Parameter list. The Parameter number is displayed first, then the current value for the parameter.

Moving down parameter list: Press and hold the **ON/OFF** key, then momentarily press the **UNITS** key to move backward through the Programming list.

Increase parameter value - Momentarily press the **PLUS (+)** key while displaying a Programming Parameter Value to increase the setting.

Decrease parameter value - Momentarily press the **MINUS (-)** key while displaying a Programming Parameter Value to decrease the setting.

Reset parameter value to default setting - Momentarily press the **DATUM** key while displaying a Programming Parameter Value to reset the parameter to the factory default value.

Exit programming mode - Press and hold the **UNITS** key. Momentarily depress the **DATUM** key. The LCD will briefly display: **PG OFF** (Programming Off), then return to normal operation.

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

Programming Parameters

The Digi readout programming parameters are listed below. Values in [] are the available range of values that can be entered for that parameter. Factory defaults are shown in **Bold Red**.

Pr 1 – Datum Key Value [0 to ± 999.999in] or [0 to ±9999.99mm]
The programmed value that will be recalled whenever the **DATUM** key is pressed during normal operation.
Default = 0.00

Pr 2 – Reading Direction [0 or 1]
This parameter controls the direction of travel (positive vs. negative) when the encoder is moved.
Default = 0

Pr 3 – Key Lockout [0 or 1]
This parameter controls the operation of the +, - and **DATUM** keys. If enabled, (set to 1), these keys will not function and the **LOCK** symbol will appear on the display. This prevents accidental changes when pressing these keys during normal operation.
Default = 0

Pr 4 – Resolution [1, 2, 3 or 4]
This parameter sets the number of places to the right of the decimal point on the readout.
A value of 1 – Low - will display x.x.
A value of 2 – Normal - will display x.xx
A value of 3 – High - will display x.xxx
Default = 3

NOTES:

Millimeters have a maximum of 2 places (even if parameter is set to 3.)
This setting has no effect when displaying fractions.



This Section includes information for:

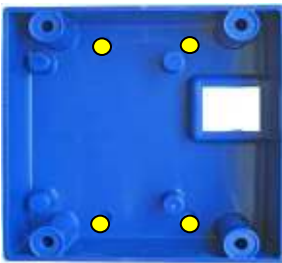
Digital Readout, LCD, Compact Part Number: 700-1600-710
With Firmware Version b 2.xxx & higher
(Press the **DATUM** key for 7 seconds to display Readout Firmware version)

Mounting

Surface Mount Configuration

The Compact readout may be mounted:

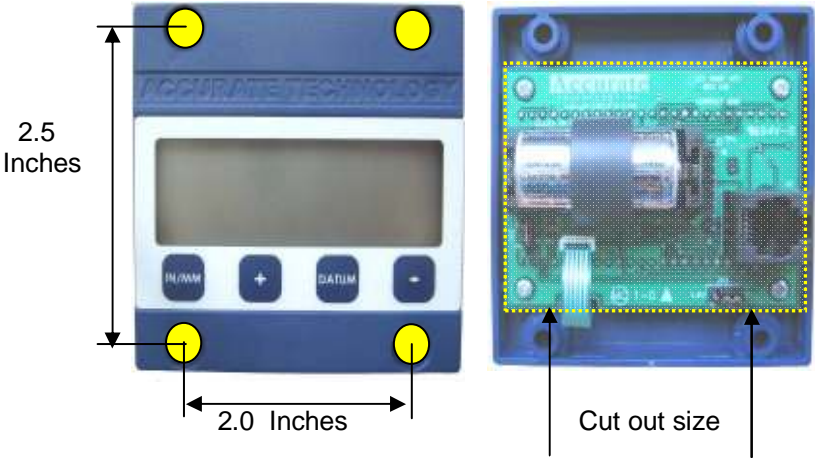
- Using Velcro or Double sided tape
- Punch out any of the four holes from the inside of the back case.
- Using any of the four holes on the back of the case. **NOTE:** Use a #4 or M3 screw not longer than 3/8 " (9mm).



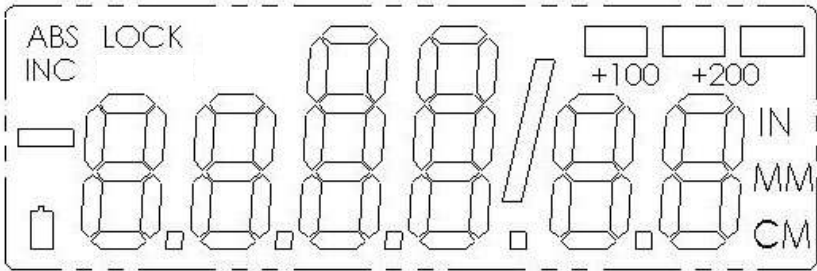
Panel Mount Configuration

A cutout should be made in the panel of at least 2.2 x 1.7 inches, (56 x 43mm) but no larger than 2.6 x 2.0 inches (66 x 50 mm).

Install the readout by screwing the four screws in the each corner of the front case directly into the panel. The rear half of the readout case is not necessary when it is used in a panel mounted configuration with a panel of sufficient thickness to hold the 4 mounting screws. If your panel is too thin to hold screws, you may 'sandwich' the panel between the front and rear halves of the readout case and install 4 screws long enough to extend through the entire assembly and into the rear half case of the readout.



The LCD

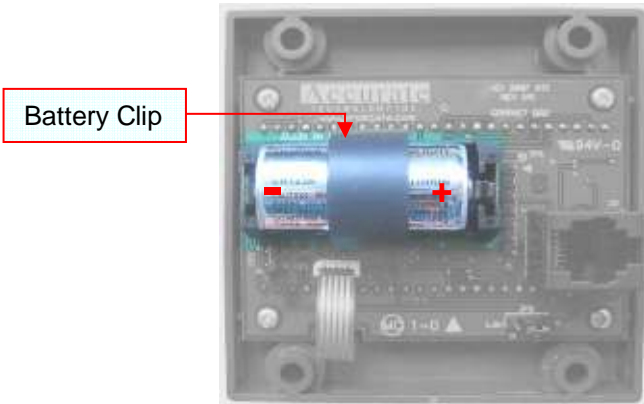


The above figure illustrates all the segments on the LCD display.
(Not all segments are used on Compact Readouts)

Changing the Battery

A low battery indicator will appear in the lower left corner of the screen on the readout when a new battery is needed.

To replace the battery, remove the 4 screws in the corners of the readout case. Separate the two cases, remove the battery clip and the old battery. Install a new CR123 3V, or equivalent, Lithium battery, noting the proper orientation. Replace the battery clip and rear case half, and reinstall the 4 screws.



Calibration

There is no calibration available or necessary for the Compact readout. System accuracy will depend on the accuracy, and quality of the installation, of the Digi measuring system it is used with.

Circuit Board Jumpers

The Compact readout has several user configurable jumpers consisting of three pins and a 'shorting block' or 'jumper'. The center of these three pins is common. One end pin is labeled **A** and the other end pin is labeled **B**.

JP1 FACTORY USE ONLY

JP2 Programming Lock-out

Front panel programming of the Compact readout can be enabled or disabled with a circuit board jumper. Programming is **enabled** when the shorting jumper is installed on position **A**. To disable programming, install it on **B**. When programming is disabled, you cannot access the readout programming functions via the front panel as described in the [PROGRAMMING](#). This prevents unauthorized or accidental readout configuration changes.

**With Jumper on position A:
Programming is Enabled**

**With Jumper on position B:
Programming is Disabled**



JP3 Encoder Voltage

The Compact readout is used with other Accurate Technology products and systems. JP3 is used to select the proper voltage necessary for these systems to operate correctly.

When using any Digi product or measuring system, this jumper must remain in position B.



Operation

Readout Keys

TIMING

The keys on your readout, illustrated below, have multiple functions. Timing, (how long a key is depressed) is important. This manual uses the terms “*momentarily*” to describe a key press of less than 0.8 seconds and “*press and hold*” to describe a key press of 2 seconds or longer. **See Table Below.**



	Momentarily	Press & Hold
How long a key is pressed?	Less than 0.8 seconds	More than 2 seconds
When is key function is executed?	On key release	While holding

The execution of a key’s function is performed on “key release” for momentary key presses and after the allotted time has elapsed for “press & hold” operations. **See Table Below.**

	Momentarily Press	Press & Hold
IN/MM	Cycles measurement units displayed: inches, fractions, mm	3 seconds: Toggles between ABSolute and INCRemental modes
(When in programming mode)	Cycles program parameter list	Has no effect
+ - (plus & minus keys)	Increments or Decrements displayed value	Increments or Decrements displayed value faster
DATUM	Forces readout to programmed value in Pr 1	7 seconds: Displays FW version 9 seconds: Enters Programming mode 3 seconds: Exits programming mode

IN/MM KEY



Momentarily press

The compact readout can display measurement/position information in inches, fractions or millimeters. To change the display mode, momentarily press the **IN/MM** key. Each key press causes the readout to cycle to the next mode, or unit of measurement: decimal inches, fractions 16ths, fractions 32nds, fractions 64ths and millimeters.

When the readout is in 1/16 or 1/32 inch fraction mode, a series of “bars” in the upper right corner of the display, each representing 1/64th of an inch, may appear. (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 would then indicate an additional 1/64 of an inch additional measurement.)

For better measurement precision, switch to 1/32 or 1/64 mode. For the best precision select a decimal mode (in or mm) for measurements.

+ AND - KEYS



Momentarily or Hold

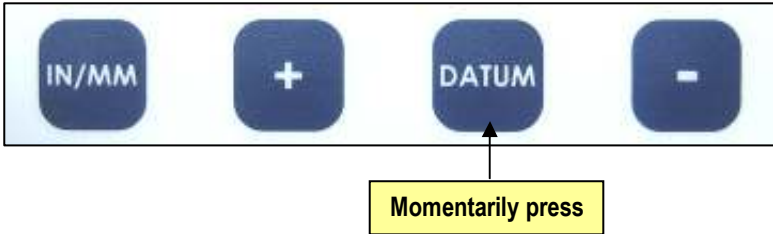
Momentarily or Hold

Momentarily pressing the **+** or **-** key increments or decrements the currently displayed value by one unit of measurement.

Pressing and holding the **+** or **-** key will cause the displayed value to change continuously. Continue pressing the key to cause the amount of change to speed up. This allows for quick adjustments over a large range of values. These keys may be locked out to prevent accidental offset entries.

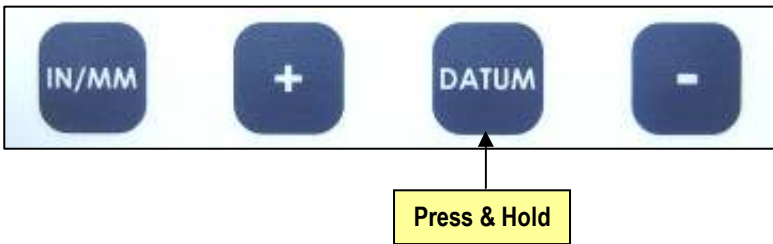
[See Section 4: Programming, Programming Parameter Pr3](#)

DATUM KEY



The **DATUM** key is used to change the currently displayed value. Momentarily pressing the **DATUM** key forces the readout to a user programmed value. This can be zero or any other displayable value. [See Section 4: Programming, **Programming Parameter Pr1**](#)

The **DATUM** key can also be locked out to prevent accidental entries. [See Section 4: Circuit Board Jumpers, **JP 2**](#)



Additional functions of the **DATUM** key:

Press and hold **DATUM** for 7 seconds to display the firmware version.
Press and hold **DATUM** for 9 seconds to enter programming mode.
Press and hold **DATUM** for 3 seconds to exit programming mode.

Readout Functions

REVERSE READINGS

Reverse readings means changing the direction of readings produced by moving the encoder. If the readout decrements (reduces or goes negative) when it should be incrementing (increasing or going positive), the readout will need to be re-programmed for your application.

See Section 4: Programming, **Programming Parameter Pr2**

INCREMENTAL MEASUREMENTS



Press & Hold for 3 seconds

The Compact readout provides the ability to make relative, or incremental, measurements and still retain the measurements system's absolute position in memory. To enter the Incremental (or return to Absolute) measurement mode, press and hold the **IN/MM** key for 3 seconds. The **ABS** or **INC** indicator will illuminate on the display.

While in Incremental mode, the **+** and **-** keys are used to set offsets and the **DATUM** key is used to zero the readout.

Example of an Incremental Measurement (with no offsets):

- 1) Enter the incremental mode (press and hold the **IN/MM** key 3 seconds.)
- 2) Make a measurement.
- 3) Momentarily depress **IN/MM** or **DATUM** key to re-zero the readout
- 4) Make another measurement
- 5) Repeat as necessary.

Example of an Incremental Measurement (with offsets):

- 1) Enter the incremental mode (press and hold the **IN/MM** key 3 seconds.)
- 2) Set the desired offset by depressing the **+** or **-** key.
- 3) Make a measurement.
- 4) Momentarily depress **IN/MM** key to reset the readout and apply the offset entered previously, or momentarily depress the **DATUM** key to re-zero the display before the next measurement.

NOTES:

1. Offsets are stored when leaving the Incremental mode. Any offsets will be recalled the next time you switch from Absolute to Incremental mode.
2. While in Incremental mode, the Units of Measurement cannot be changed. If the display is reading **mm** when you enter the INC mode you cannot change to **inches** without first returning to the ABS mode.

KEY LOCK

The user can lock-out the operation of the **+**, **DATUM** and **-** key functions to prevent accidental changes of the currently displayed value.

To lock these keys set **Programming Parameter Pr3 =1**

See [Section 4: Programming](#), **Programming Parameter Pr3**

RESOLUTION

The readout can be configured to display measurements in any of three different resolutions.

1. Low– the resolution is: .1in or .1mm.
2. Normal– the resolution is: .01in or .01mm.
3. High– the resolution is: .001in or .01mm

The display of fractions remains the same for all settings: 1/16, 1/32 & 1/64

See [Section 4: Programming](#), **Programming Parameter Pr4**

RESTORE READOUT TO FACTORY SETTINGS

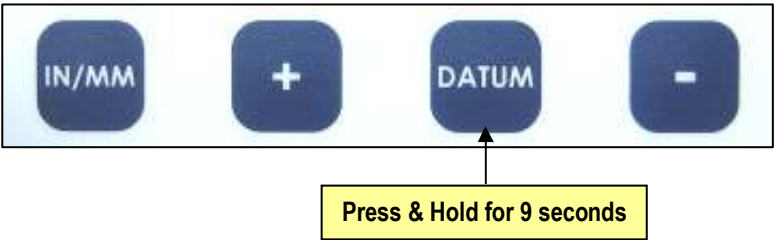
Remove the battery. Press and hold **IN/MM** key while reinstalling the battery.

Programming

Several functions of this readout are user programmable. The following describes what features and functions are available and how to change the factory defaults to customize the system to suit your application needs.

To enter programming mode:

Press and hold the **DATUM** key. After approximately 7 seconds the readout firmware version (**b 1.xxx**) will be displayed for 2-3 seconds and then the readout will enter programming mode. **PR 1** is displayed, immediately followed by the programmed value for Pr1. Release the **DATUM** key. You are now in programming mode.



Once you are in the Programming mode, momentarily pressing the **IN/MM** key will advance through the Programming Parameter list, first displaying the Programming Parameter number, Pr x, then the currently programmed value for that parameter.

Momentarily press the **+** key to increase the parameter value setting.

Momentarily press the **-** key to decrease the parameter value setting.

Momentarily press **DATUM** to reset the parameter to the factory default value.

To exit programming mode:

Press and hold the **DATUM** key for 3 seconds.

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

Programming Parameters

Compact Readout Programming Parameters are listed below. Values in [] are the available range of values that may be programmed for that parameter.

Factory defaults are shown in **Bold Red**.

Pr 1 – Datum Key Value [0 to \pm 999.999in] or [0 to \pm 9999.99mm]

This value will be recalled and displayed when the **DATUM** key is pressed during normal operation (not during programming).

Default = 0

Pr 2 – Reading Direction [0 or 1]

This parameter controls the direction of measurement (positive vs negative) when the measuring system is moved.

Default = 0

Pr 3 – Key Lockout [0 or 1]

This parameter controls the operation of the +, - and **DATUM** keys. If enabled, (set to 1), these keys will not function and the **LOCK** symbol will appear on the readout. This prevents accidental changes when depressing these keys during normal operation.

Default = 0

Pr 4 – Resolution [1, 2 or 3]

This parameter sets the number of places to the right of the decimal point on the readout.

A value of **1** will display x.x.

A value of **2** will display x.xx

A value of **3** will display x.xxx

Default = 2

NOTE:

Decimal inch mode has a maximum of 3 places.

Millimeter mode has a maximum of 2 places (even if parameter is set to 3.)

Fractions mode is not affected by this setting.

ERROR CODES

What does no Enc mean?

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

4. Be sure the encoder is on the scale.
5. Connect the encoder to the readout.
6. Unplug the encoder from the readout for 5 seconds and then reconnect.

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 batteries 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 batteries to clear this message.

**Thank you for choosing an
AMERICAN MADE PRODUCT**



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Fletcher, NC 28732 USA
828.654.7920

Please register your product at:
<http://www.proscale.com/registration.htm>

This manual is available online at:
www.proscale.com

Part # 800-1404-001 Rev B
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