Electronic Dial Indicator Instructions

CORE

VRS

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Electronic Dial Indicator
CORE

DATA Send Measurement
IN Inch
mm Millimeter
RES Resolution
Battery Warning
Wireless Data
Cable Connection
- **+** Travel Positive
+ **-** Travel Negative

- Absolute Sensor – Never lose position (even when replacing batteries)
- Long Battery Life – Approximate Hours: Casual Daily Use +10,000 Hours; Average Daily Use +6,000 Hours; Wireless Communication Use 1,000 Hours
- No Over-Speed Error – Fast spindle speeds
- Fixed Scale – More robust, reliable, & compact design than a moving scale
- Incremental Measuring Mode
- Large Display with ½" Tall Numbers
- Off Button
- Rotating Bezel 270 degrees
- + / - Travel Direction Button
- Floating Zero
- Resolution Change Button
- IN mm Button – Change displayed units
- Low Battery Warning Icon
- Data Send Button
- Data Cables USB, MTI (Digimatic), RS232
- Built-In wireless short range radio module (standard equipment) Download "Electronic Dial Indicator" App in IOS and Android Stores.
- Built-in wireless Long Range Radio Module (optional). MicroRidge Radio Receiver sold separately
- Made In USA

BUTTON FUNCTIONS

ON Zero Powers indicator ON. Zeros / clears reading

a. To Power Indicator On: Press & Release **ON ZERO**
b. To Clear / Zero Display: Press & Release **ON ZERO** when LCD is On. (Zero on Release of Button)

OFF Powers indicator off

a. To Power Indicator Off: Press & Release **OFF** (position & settings are not lost when indicator is off)

DATA Sends Data from indicator with cable or wireless radio module

a. To Send Data: Press & Release **DATA**
b. If cable is connected, the indicator reading will be sent through the data output cable. If wireless output is setup, the indicator reading will be sent by wireless output.
c. A computer can also request readings & you can setup the indicator to automatically send readings wirelessly
d. See Data Output & Wireless Instructions for more information.

IN mm Controls the display units (default is IN / English)

a. To Change From Inch To Millimeter Or Millimeter To Inch: Press & Release **IN mm**
b. **mm** for millimeter (metric) or **IN** for inch (English) will appear on right side of display.

RES Changes display resolution

a. To Change Resolution: Press & Release **RES**. Repeat until desired resolution is displayed.
b. **IN** .00005"; .0001"; .0005"; .001" **mm** .001mm; .002mm; .01mm; .02mm
c. Resolution can only be changed to a coarser resolution than the base indicator purchased.

+ / - Changes spindle / travel direction

a. To Change Travel Direction Of Reading: Press & Release **+/-**. + – or – + icons appear on LCD for 1 second
b. + – will count negative with the inward direction of spindle travel. – + will count positive with the inward direction of spindle travel.
c. – is displayed for negative readings & no sign is displayed for positive readings.

Note:
Factory reset: Press & Hold **ON ZERO** & **OFF** simultaneously until RESET appears on LCD

Single Indicator Software

* **Easy to Read Display on PC**
* **Manual Log Data** – Single Mouse Click
* **Auto Log Data** – Timed Logging
* **View Data Log Readings** – Data Saved as a CSV File
* **Program Gage from PC** – Can program your indicators features from your PC and load on to the indicator

1 Ratio , 1 Preset, Tolerances (high & low),

Lock Code – 0-21 alpha -numeric characters (leaving blank will work) , Resolution, Units (in / mm),

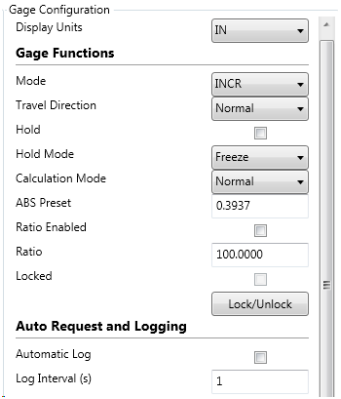
Travel Direction, Mode (TIR, INC, ABS),

Hold function (Min/ Max/ Frz)

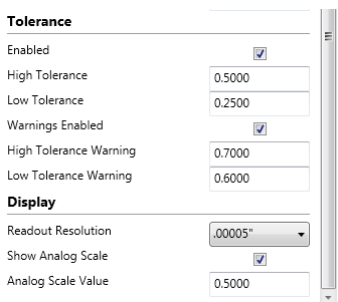
*** Analog Bar on PC**

*** Download Log Readings / Stored Readings from Indicator** – Most Indicator Models can store up to 200 measurements and be downloaded into View Data Log Readings

*** Clear / Zero Indicator**



Time	Measurement	Units
7/23/2017 1:42:00 AM	0.00005	IN
7/23/2017 1:42:01 AM	0.00005	IN
7/23/2017 1:42:02 AM	0.00005	IN
7/23/2017 1:42:03 AM	0.00005	IN
7/23/2017 1:42:04 AM	0.00005	IN
7/23/2017 1:42:05 AM	0.00005	IN
7/23/2017 1:42:06 AM	0.00005	IN
7/23/2017 1:42:07 AM	0.00005	IN
7/23/2017 1:42:08 AM	0.00005	IN
7/23/2017 1:42:10 AM	0.00005	IN
7/23/2017 1:42:11 AM	0.00005	IN
7/23/2017 1:42:12 AM	0.00005	IN
7/23/2017 1:42:13 AM	0.00005	IN
7/23/2017 1:42:14 AM	0.00005	IN
7/23/2017 1:42:15 AM	0.00005	IN
7/23/2017 1:42:16 AM	0.00005	IN
7/23/2017 1:42:17 AM	0.00005	IN
7/23/2017 1:42:18 AM	0.00005	IN



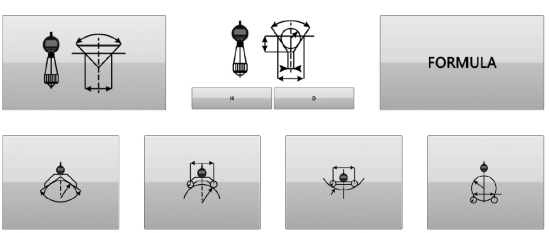
CALC Software

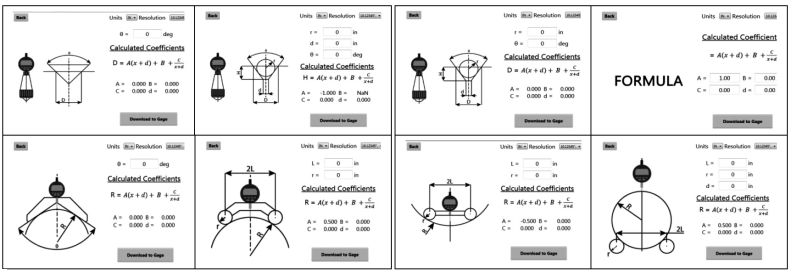
CALC Software (includes USB cable)

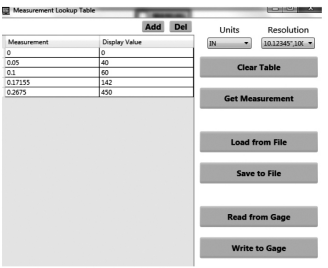
Measurement Formulas and Lookup Table

Formulas: Choose from the 8 formulas to program the indicator

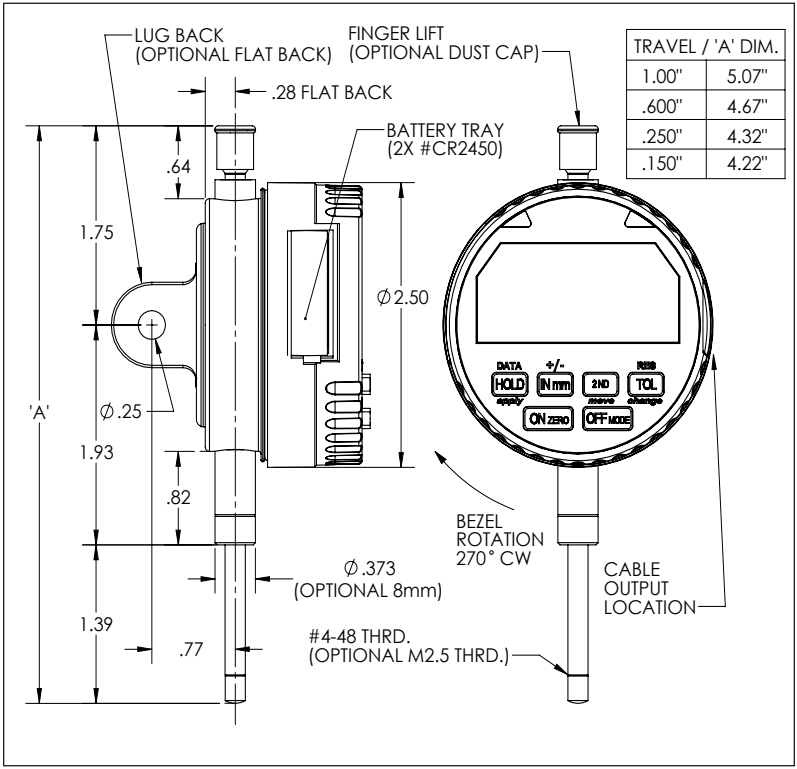
Lookup Table: Use a customizable lookup table to program up to 127 points for calibrating an indicator to a fixture, or program a non-linear equation.







Dimensions & Useful Tips/Precautions



TRAVEL / 'A' DIM.	
1.00"	5.07"
.600"	4.67"
.250"	4.32"
.150"	4.22"

- Avoid dust, dirt, lateral forces & shock
- Wipe spindle with a cloth & alcohol
- Use rigid & precise holders
- Make sure contact point is tight

Specifications

Measurement range	.250" / 6mm	.600" / 15mm	1.00" / 25 mm
Max error (.000050" / .001mm Resolution)	.00012" / .003mm	.00012" / .003mm	.00012" / .003mm
Max error (.0001" / .002mm Resolution)	.0002" / .004mm	.0002" / .004mm	.0002" / .004mm
Repeatability	.000050" / .0012mm	.000050" / .0012mm	.0001" / .002mm
Weight	.41lb (.18kg)		
Measurement force	150 gm (1.47N)	150 gm (1.47N)	155 gm (1.52N)
Power battery	2 x 3V lithium battery CR2450		
Data Cable	5V		
Average battery life	6,000 hours (ave. life decreases using TIR, MAX, MIN, Radio, TOL LEDs)		
Data output	USB, Digimatic (MTI)		
Cables	USB, 10 pin Digimatic (MTI) , RS232, Pigtail		
Wireless built in module (short range)	(Standard) compatible with "Electronic Dial Indicator" App in IOS & Andriod Apps Store		
Wireless built in module (long range)	(Optional) Microridge Radio compatible with Microridge receivers		
Working temperature (storage)	5° C to 40° C (-10° C to 60° C) 40° F to 105° F (-15° F to 135° F)		

Error Codes

Error	Cause	Notes
Error (Radio Menu)	Wireless radio failure	Contact support if issue persists
Error 3	Failed to load saved settings	Contact support if issue persists
Error 4	Value is too large to display	Zero gage or reduce spindle travel
Error 5	Failed to load factory configuration	Device may not operate correctly, contact support
Error 10	Incomplete lookup table	Please download new lookup table or disable function

Compliance

CE & ROHS The product components have been tested and meet the compliance requirements to the current EU RoHS directives. The indicators have also passed the CE requirements, including EMI and ESD and fulfill the requirements of the CE directive and can bear the CE symbol.

REACH Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), EC No. 1907/2006, controls the list of Substances of Very High Concern (SVHC). The product does not use any of these controlled substances or preparations; therefore, does not require registration under REACH. The articles we manufacture do not involve the intentional release of any chemical substances.

WEEE and WEEE-II The product components are made of many recyclable materials, which do not contain any restricted hazardous materials. Therefore, please recycle the CDI product when it completes its useful life.

Prop 65 The products and the materials used in the products have been evaluated for compliance to the State of California Prop 65 requirements and found that there are NO significant risk levels (NSRL) for any of the materials listed on the Prop 65 list of "Chemicals Known to the State to Cause Cancer or Reproductive Toxicity". No label is required. A list of Prop 65 chemicals that may be found in the products that have no significant risk levels include:

Name of contained Substances	CAS-Number	Label Required
Formaldehyde	50-00-0	no
Acrylonitrile	107-13-1	no
Butadiene	106-99-0	no
Styrene	100-42-5	no
Lead	7439-92-1	no
Carbon Black	1333-86-4	no

DATA Outputs

Data I/O Connector

The indicator has an 8 pin data I/O connector with several supported communication protocols. These communication protocols can be accessed using a dedicated cable or through custom wiring using the Pigtail cable.

Serial ASCII Command Protocol (USB/RS232/UART)

The gage supports several "serial" interfaces that interact with the device using a human readable ASCII command protocol. This protocol can be accessed over USB as a virtual com (CDC) device, RS232 or TTL level UART. For all hardware implementations, the specifications and command set are identical.

Commands

All Commands are terminated with a new line character <CR>. All commands and the most common settings are listed below. Please see technical manual for more details.

Examples: Enter p013=2 followed by a <CR> to change the display units to MM.

COMMAND	DESCRIPTION
R	Print current gage reading
C	Clear gage
H	Toggle Hold Mode
rstERR	Resets errors
?pXXX	Get the value of configuration parameter "XXX"
pXXX=<new value>	Set the value of parameter "XXX" to <new value>

RESPONSES	DESCRIPTION
+ 2.1380, MM	13 character response to print reading
SUCCESS	Parameter is successfully written to
NOT FOUND	Parameter Name could not be found
NO ACCESS	User does not have write access
OUT OF BOUNDS	New value is not within the allowable range
NON NUMERIC	New value is not a number

Hardware Specifications

Baud	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

PARAMETER	DESCRIPTION	OPTIONS
P007	Gage Resolution	1 = .001", .02mm, 2 = .0005", .01mm, 3 = .0001", .002mm, 4 = .00005", .001mm
P011	Measurement Mode	0=ABS, 1=TIR, 2=INCR
P013	Units	1=Inches, 2=Millimeters
P019	Travel Reverse	0=Normal, 1=Reverse
P021	Hold On	0=Off, 1=On
P022	Hold Mode	0=Frz, 1=Min, 2=Max
P040	Ratio On	0=Off, 1=On
P063	Suppress Output	0=None, 1=Disable error and status responses

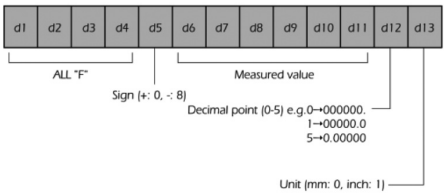
DATA Outputs

Digimatic (MTI) Protocol

The gage supports the Digimatic (MTI) protocol, also commonly referred to as SPC. Digimatic is a 3 wire (REQ, DATA, CLK) communication protocol that operates at TTL levels and sends gage measurements in a 13 digit (52 bit) packet format. The output is compatible with most data collection devices supporting the Digimatic protocol including the Electronic Measuring System.

Packet Timing

Maximum Request Rate	10 Hz
Data Clock Frequency	1,250 Hz



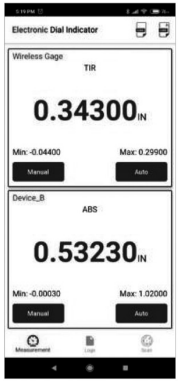
Wireless Communication

The CORE & VRS indicators have two wireless communication options available.

Shortrange Smartphone Interface

The gage supports communication using a shortrange wireless radio compatible with most major smartphones. Using the free Android and iOS apps, a user can perform the following actions:

- Connect to 7 devices
- View measurements in analog and digital formats
- Record measurements and share via email
- Change settings



The smartphone interface can also be provided for use in custom application. Users should contact support for more details.

MicroRidge

The gage may include a longer range RM2.4 MicroRidge radio module. This allows the gage to be integrated into the complete MicroRidge ecosystem. The radio supports transmission of measurements at up to 5 Hz and can be received using one of the MicroRidge base receivers (USB, RS232, Wedge)

Contact MicroRidge or visit microridge.com for further details on their wireless system

MICRORIDGE
Measurement Collection Specialists
Connect Any Gage into Any Software

Wireless Communication

Press & Release ❍ Press & Hold ●

Radio Menu

Allows for enabling of the radio interface as well as control over the measurement update rate

VRS	CORE
a. To Enter Radio Menu 1. Press & Release 2ND 2. Press & Hold HOLD 3. You will see radio displayed **b**. To Exit Radio Menu 1. Press & Release ON ZERO or OFF MODE	**a**. To Enter Radio Menu 1. Press & Hold DATA 2. You will see radio displayed **b**. To Exit Radio Menu 1. Press & Release ON ZERO or OFF MODE

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Enable Radio / Set Update Rate (off, 0, 0.5, 1, 5)

The update rate is how often the measurement is transmitted over wireless in Hz

Off - will disable the ratio

0 - will disable automatic transmission (only sent with DATA button)

0.5 Hz - update every 2 seconds

1 Hz - update every second

5 Hz - update 5 times/sec

VRS	CORE
a. Configure Radio (in Radio Menu) 1. Press & Release *change* (TOL) to cycle 2. Press & Release *apply* (Hold) to enter (or wait 5 sec) **b**. Disable Radio 1. Repeat steps above and select off	**a**. Configure Radio (in Radio Menu) 1. Press & Release +/- to cycle 2. Press & Release DATA to enter (or wait 5 sec) **b**. Disable Radio 1. Repeat steps above and select off

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Pairing (*MicroRidge Only)

MicroRidge receivers require devices to be paired before use. Please refer to the documentation of your receiver for the correct process. When instructed to send the pair command:

1. Ensure you are in the radio menu (radio displayed on gage) and the radio is enabled
2. Press & Release **IN mm**
3. You will see pair displayed momentarily

Wireless Icon

The wireless icon will indicate the state of the radio

Off – Radio is disabled

Blinking – Indicates the radio is enabled and not connected to a device

(*Smartphones only)

Solid – Radio is enabled and connected

Smart Phone Application

The smartphone app has 3 primary screens accessible from the bottom navigation bar

Measurement

Allows viewing of measurements for connected gages

Manual – Logs a single measurement

Auto – Continuously records measurements at the configured rate

The buttons in the title bar provide equivalent functionality for all connected devices

To adjust settings and issue commands, tap anywhere on the gage tile and you will be taken to the Gage Configuration for that device

Logs

Allows viewing and sharing of recorded measurements

Tap the graph or table icons to view data

Check the box to enable sharing data via email or other apps

Log files will be created automatically each day. To create a new file within a given day, press the (+) button

To delete files, swipe left

Scan

Allows scanning for available gages and connecting to them

Ensure your devices radio is enabled and the wireless icon is blinking prior to scanning

To delete a device, swipe left

Help

Additional help information can be found in the upper right overflow menu