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1.0 INTRODUCTION

Check•Line's 3000FX Series gauges provide precise, non-destructive digital coating thickness measurement on steel and non-ferrous metals.

Three models are available:

DCF-3000FX: For testing non-magnetic coatings such as varnish, paint, enamel, chrome, copper, zinc, etc., on steel and iron.

DCN-3000FX: For testing varnish, paint and anodizing on non-ferrous metals and on austenitic stainless steels.

DCFN-3000FX: Combines the ferrous and non-ferrous testing capabilities of the DCF-3000FX and DCN-3000FX.

3000FX Series gauges employ the same familiar menu technique that is used in cellular telephones.

There are 4 main menu sections: Calibrations, Statistics, Limit Values and Options. All gauge functions are accessed from one of these main sections. The steps to necessary to reach and activate a particular gauge function appear on the display in clear, easily understood language—*place probe on Cal foil,* for example. A confirming message appears on the display as each step is completed.

The Appendix provides a diagram of the menu structure. It will be helpful to take a few minutes to study the Appendix while practicing using the ▲, ▼, **OK** and **ESC** keys to move through the menus selections. The 3000FS Series gauges are very easy to use. A few minutes spent familiarizing yourself with using the keys to move through the menus is all the training required.

WARRANTY

ELECTROMATIC Equipment Co., Inc. (ELECTROMATIC) warrants to the original purchaser that this product is of merchantable quality and confirms in kind and quality with the descriptions and specifications thereof. Product failure or malfunction arising out of any defect in workmanship or material in the product existing at the time of delivery thereof which manifests itself within one year from the sale of such product, shall be remedied by repair or replacement of such product, at ELECTROMATIC's option, except where unauthorized repair, disassembly, tampering, abuse or misapplication has taken place, as determined by ELECTROMATIC. All returns for warranty or non-warranty repairs and/or replacement must be authorized by ELECTROMATIC, in advance, with all repacking and shipping expenses to the address below to be borne by the purchaser.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE OR APPLICATION. ELECTROMATIC SHALL NOT BE RESPONSIBLE NOR LIABLE FOR ANY CONSEQUENTIAL DAMAGE, OF ANY KIND OR NATURE, RESULTING FROM THE USE OF SUPPLIED EQUIPMENT, WHETHER SUCH DAMAGE OCCURS OR IS DISCOVERED BEFORE, UPON OR AFTER REPLACEMENT OR REPAIR, AND WHETHER OR NOT SUCH DAMAGE IS CAUSED BY MANUFACTURER'S OR SUPPLIER'S NEGLIGENCE WITHIN ONE YEAR FROM INVOICE DATE.

Some State jurisdictions or States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. The duration of any implied warranty, including, without limitation, fitness for any particular purpose and merchantability with respect to this product, is limited to the duration of the foregoing warranty. Some states do not allow limitations on how long an implied warranty lasts but, not withstanding, this warranty, in the absence of such limitations, shall extend for one year from the date of invoice.

ELECTROMATIC Equipment Co., Inc.
600 Oakland Ave. Cedarhurst, NY 11516—USA
Tel: 1-800-645-4330/ Tel: 516-295-4300/ Fax: 516-295-4399

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THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE OR APPLICATION. ELECTROMATIC SHALL NOT BE RESPONSIBLE NOR LIABLE FOR ANY CONSEQUENTIAL DAMAGE, OF ANY KIND OR NATURE, RESULTING FROM THE USE OF SUPPLIED EQUIPMENT, WHETHER SUCH DAMAGE OCCURS OR IS DISCOVERED BEFORE, UPON OR AFTER REPLACEMENT OR REPAIR, AND WHETHER OR NOT SUCH DAMAGE IS CAUSED BY MANUFACTURER'S OR SUPPLIER'S NEGLIGENCE WITHIN ONE YEAR FROM INVOICE DATE.

Some State jurisdictions or States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. The duration of any implied warranty, including, without limitation, fitness for any particular purpose and merchantability with respect to this product, is limited to the duration of the foregoing warranty. Some states do not allow limitations on how long an implied warranty lasts but, not withstanding, this warranty, in the absence of such limitations, shall extend for one year from the date of invoice.

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APPENDIX: DIAGRAM OF MENU STRUCTURE

After turning on the instrument, press ▲ or ▼ repeatedly to move to the desired main section (Calibration, for example). Next, press **OK** to access the second level subsections within the main section. Press ▼ to scroll through the second level subsections and **OK** to select one. Use the same technique of pressing ▲ or ▼ and **OK** to access third level subsections; use **ESC** to move back to the next higher level up to the - - - - screen, delete the last reading immediately after taking it and interrupt a setting action.

1/4 CALIBRATION
- **1/4 Zero Setting**
- **2/4 Foil Calibration**
- **3/4 Zero Offset**
  - 1/2 Offset setting
  - 2/2 Delection of Offset
- **4/4 Deletion of Calibration**
  - 1/1 Works Calibration Activated

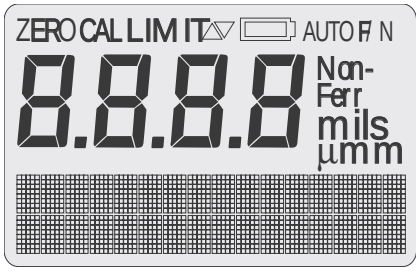
2/4 STATISTICS
- **1/5 Print Out of Statistics**
- **2/5 Print Out of Measurements**
- **3/5 Display of Statistics**
- **4/5 Display of Measurements**
- **5/5 Delection of Statistics**

3/4 LIMITS
- **1/2 Limit Setting**
  - 1/2 Set Lower Limit
  - 2/2 Set Upper Limit
- **2/2 Deletion of Limits**

4/4 OPTIONS
- **1/9 Measuring Unit**
  - 1/2 µm
  - 2/2 mils
- **2/9 Measuring Mode**
  - 1/3 Auto FN Ident
  - 2/3 Ferrous (F)
  - 3/3 Non-Ferrous (N)
- **3/9 Switch Off Mode**
  - 1/2 Auto
  - 2/2 Permanent
- **4/9 Backlight**
  - 1/3 Off
  - 2/3 3 Secs
  - 3/3 Permanent
- **5/9 Beeper**
  - 1/2 On
  - 2/2 Off
- **6/9 Online Statistics**
  - 1/2 Mean & Stad. Dev.
  - 2/2 Max and Min
- **7/9 Welcome Test**
  - 1/2 On
  - 2/2 Off
- **8/9 Power Supply**
  - 1/2 Batteries
  - 2/2 Rechargeable Batteries
- **9/9 Language**
  - 1/3 English
  - 2/3 Espanol
  - 3/3 Francais

2.0 OVERVIEW

2.1 Display



▭	If this symbol flashes, the batteries have to be changed, see page 9.
--------	Appears if limit values are exceeded or not reached
ZERO	Appears when Zero calibration is complete. *If flashing:* ZERO setting begun but not completed.
CAL	Appears when Foil calibration is complete. *If flashing:* CAL setting begun but not completed.
LIMIT	Appears if Limit values have been set. *If flashing:* LIMIT setting begun but not completed.
AUTO FN	Appears when automatic ferrous / non-ferrous measuring mode is active.
Ferr	Appears when ferrous measuring mode is active.
Non-Ferr	Appears when non-ferrous measuring mode is active.
µm	All measured values given in µm unit.
mils	All measured values given in mils unit.

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  - 1/1 Works Calibration Activated

2/4 STATISTICS
- **1/5 Print Out of Statistics**
- **2/5 Print Out of Measurements**
- **3/5 Display of Statistics**
- **4/5 Display of Measurements**
- **5/5 Delection of Statistics**

3/4 LIMITS
- **1/2 Limit Setting**
  - 1/2 Set Lower Limit
  - 2/2 Set Upper Limit
- **2/2 Deletion of Limits**

4/4 OPTIONS
- **1/9 Measuring Unit**
  - 1/2 µm
  - 2/2 mils
- **2/9 Measuring Mode**
  - 1/3 Auto FN Ident
  - 2/3 Ferrous (F)
  - 3/3 Non-Ferrous (N)
- **3/9 Switch Off Mode**
  - 1/2 Auto
  - 2/2 Permanent
- **4/9 Backlight**
  - 1/3 Off
  - 2/3 3 Secs
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  - 1/3 English
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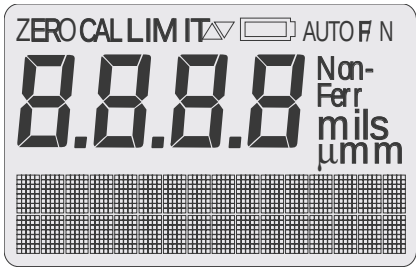
2.0 OVERVIEW

2.1 Display



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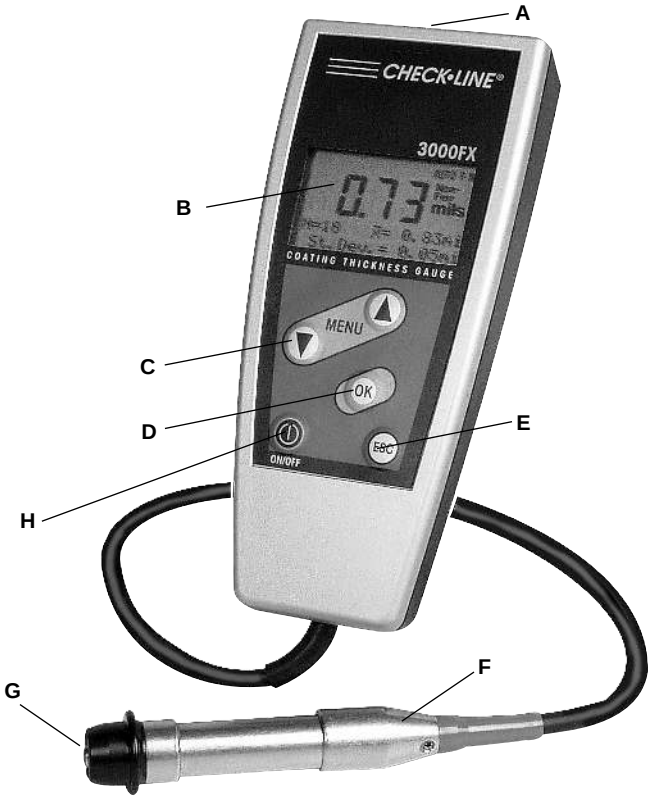
AUTO FN	Appears when automatic ferrous / non-ferrous measuring mode is active.
Ferr	Appears when ferrous measuring mode is active.
Non-Ferr	Appears when non-ferrous measuring mode is active.
µm	All measured values given in µm unit.
mils	All measured values given in mils unit.

2.2 Gauge



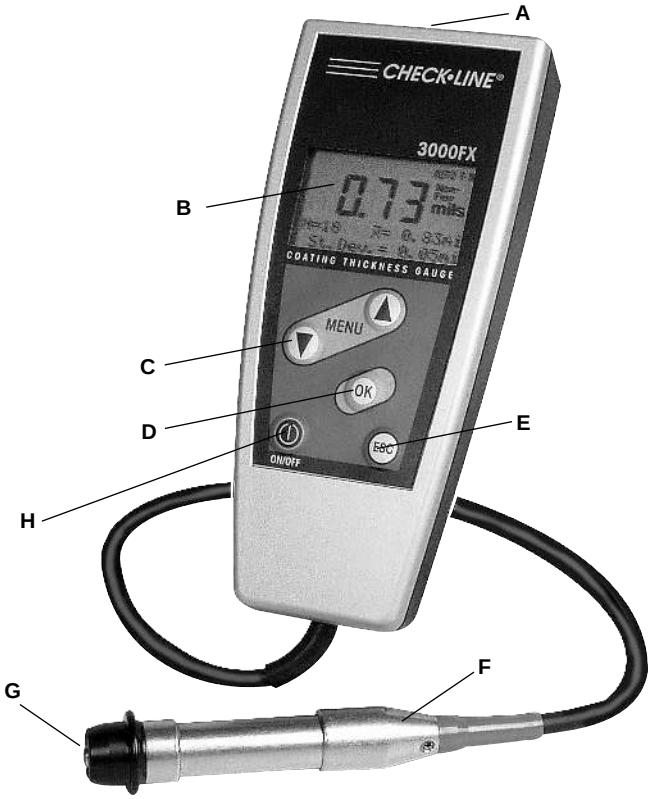
12.0 Optional Accessories

Infrared Adapter

Data Transfer Software

Test Stand

2.2 Gauge



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12.0 Optional Accessories

Infrared Adapter

Data Transfer Software

Test Stand

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11.0 Resolution Table

Mils

00.00	– 9.99 mils	0.01 mils
10.00	– 24.98 mils	0.02 mils
25.00	– 49.95 mils	0.05 mils
50.00	– 60 mils	0.1 mils

Microns (µm)

000.0	– 999 µm	0.1 µm
100.0	– 249.8 µm	0.2 µm
250.0	– 499.5 µm	0.5 µm
500.0	– 999.0 µm	1.0 µm
1,000	– 1500 µm	0.002mm

A	**IR Sensor**	Transmits stored measurement data to a PC or printer equipped with an infrared adapter
B	**LED Screen**	Displays numerical data & operator prompts
C	**▲ ▼ Keys**	*Use to:* 1. Scroll through main menu 2. Set calibration 3. Set zero offset 4 Set limit alerts
D	**OK Key**	*Use to:* 1. Confirm menu selection 2. Complete setting an action
E	**ESC Key**	*Use to:* 1. Move back to next higher menu level 2. Delete last reading (immediately after recording it) 3. Delete of statistics & stored readings 4. Exit calibration, zero offset and limit alert setting procedures
F	**Probe**	Place on test sample at a right angle to take measurement.
G	**Measurement Sensor**	Must be in contact with test sample for measurement data to be recorded
H	**Power Switch**	Turns the gauge on and off

11.0 Resolution Table

Mils

00.00	– 9.99 mils	0.01 mils
10.00	– 24.98 mils	0.02 mils
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B	**LED Screen**	Displays numerical data & operator prompts
C	**▲ ▼ Keys**	*Use to:* 1. Scroll through main menu 2. Set calibration 3. Set zero offset 4 Set limit alerts
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F	**Probe**	Place on test sample at a right angle to take measurement.
G	**Measurement Sensor**	Must be in contact with test sample for measurement data to be recorded
H	**Power Switch**	Turns the gauge on and off

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2.3 Complete Kit

3000 Series gauges are supplied as a complete kit, including:

- Gauge
- Probe
- Zero calibration standards (Fe-stainless and/or Al)
- Calibration foils (2),
- Batteries (2x AA)
- Operating manual
- NIST calibration certificate
- Carrying case

10.0 Measuring Limits

Minimum Radius for Convex Surfaces	0.12" (3mm)
Minimum Radius for Concave Surfaces	0.2" (5mm)
Minimum Headroom	4" (100 mm)
Minimum Sample Diameter	0.2" (5mm)
Minimum Substrate Thickness - F	20 mils (0.5 mm)
Minimum Substrate Thickness - NFe	2 mils (50 µm)

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- Operating manual
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- Carrying case

10.0 Measuring Limits

Minimum Radius for Convex Surfaces	0.12" (3mm)
Minimum Radius for Concave Surfaces	0.2" (5mm)
Minimum Headroom	4" (100 mm)
Minimum Sample Diameter	0.2" (5mm)
Minimum Substrate Thickness - F	20 mils (0.5 mm)
Minimum Substrate Thickness - NFe	2 mils (50 µm)

9.0 SPECIFICATIONS

Range	0 – 60.00 mils *(0 - 1500 µm)*
Accuracy	±(0.04 mils / 1µm + 1% of reading)
Display	Back-lit, 4-digit alphanumeric, digit height 0.4" (*10mm)*
Minimum Measuring Area	0.2" x 0.2" *(5mm x 5mm)*
Minimum Curvature Radius	concave: 0.2" *(5mm)*, convex: 0.12" *(3mm)*
Minimum Substrate Thickness	20 mils (*0.5 mm)*
Calibration	Factory calibration, zero calibration, foil calibration, *Off-set function:* addition or subtraction of a constant value
Memory	80 readings
Statistics Program	Number of readings, mean value, standard deviation, maximum and minimum reading of max. 10,000 readings
Set Limits	Adjustable selectable with acoustic alarm
Data Output	Infrared IrDA standard
Operating Temp.	32 °F to 122 °F *(0 °C to 50 °C)*
Surface Temp.	5 °F to 140 °F *(-15 °C to 60 °C)*
Storage Temp.	-4 °F to 140 °F *(-20 °C to +60 °C)*
Power	2 AA 1.5V
Dimensions	5.6" x 2.5" x 1.2" *(140mm x 562mm x 30mm)*
Weight	7 oz *(200 g)* — gauge + probe
Protection Class	IP 52 (proof against dust and dripping water)
Standards	DIN, ISO, ASTM, BS

3.0 BASIC PROCEDURES

3.1 Turning Power ON and OFF

To turn the gauge **on**, press and hold the **power switch** (item H, page 4) for two seconds, until the chime sounds. The start screen appears briefly, followed by - - - -. The gauge is now ready to use.

To turn the gauge **off**, press and hold the **power switch** (item H, page 4) for two seconds, until the chime sounds.

Auto Power Off / Permanent On modes

When in the automatic power-off mode, the gauge will automatically turn itself off after 90 seconds of non-use. In the permanent on mode, the gauge will remain on continuously, even during extended periods of non-use. To switch between modes:

1. Press the ▼ key repeatedly until **Options** shows on the display.
2. Press **OK**
3. Press the ▼ key repeatedly until **Switch Off Mode** shows on the display.
4. Press **OK**
5. Press the ▼ key to select either permanent on or auto switch off.
6. Press **OK** to confirm your selection.

NOTE: To cancel a selection and exit from the menu subsection press **ESC**.

9.0 SPECIFICATIONS

Range	0 – 60.00 mils *(0 - 1500 µm)*
Accuracy	±(0.04 mils / 1µm + 1% of reading)
Display	Back-lit, 4-digit alphanumeric, digit height 0.4" (*10mm)*
Minimum Measuring Area	0.2" x 0.2" *(5mm x 5mm)*
Minimum Curvature Radius	concave: 0.2" *(5mm)*, convex: 0.12" *(3mm)*
Minimum Substrate Thickness	20 mils (*0.5 mm)*
Calibration	Factory calibration, zero calibration, foil calibration, *Off-set function:* addition or subtraction of a constant value
Memory	80 readings
Statistics Program	Number of readings, mean value, standard deviation, maximum and minimum reading of max. 10,000 readings
Set Limits	Adjustable selectable with acoustic alarm
Data Output	Infrared IrDA standard
Operating Temp.	32 °F to 122 °F *(0 °C to 50 °C)*
Surface Temp.	5 °F to 140 °F *(-15 °C to 60 °C)*
Storage Temp.	-4 °F to 140 °F *(-20 °C to +60 °C)*
Power	2 AA 1.5V
Dimensions	5.6" x 2.5" x 1.2" *(140mm x 562mm x 30mm)*
Weight	7 oz *(200 g)* — gauge + probe
Protection Class	IP 52 (proof against dust and dripping water)
Standards	DIN, ISO, ASTM, BS

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2. Press **OK**
3. Press the ▼ key repeatedly until **Switch Off Mode** shows on the display.
4. Press **OK**
5. Press the ▼ key to select either permanent on or auto switch off.
6. Press **OK** to confirm your selection.

NOTE: To cancel a selection and exit from the menu subsection press **ESC**.

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3.2 Selecting Units of Measure (µm-metric or inch-mils)

1. Press ▼ repeatedly until display shows **Options**.
2. Press **OK**. The display shows **Measuring Unit**.
3. Press **OK**. The display shows **µm unit**
4. Press **OK** to confirm **µm** as unit of measurement *OR*
5. Press ▼ again. The display shows **mils unit**.
6. Press **OK** to confirm **mils** as unit of measurement

The selected unit of measure (mils or µm) will appear on the display, followed by the start screen - - - -.

3.3 Backlight

3000FX Series gauges equipped with a backlight function to improve the readability of the display in certain lighting conditions. The operator can select permanent on, 3-second on (after each measurement) and off:

1. Press the ▼ key until **Options** shows on the display.
2. Press **OK**.
3. Press the ▼ key to scroll to the desired backlight state.
4. Press **OK** to confirm your selection.

The selected backlight state will appear on the display briefly, followed by the start screen - - - -.

3.4 Beeper

To turn the audible signal on and off:

1. Press the ▼ key until **Options** shows on the display.
2. Press the **OK** key.
3. Press the ▼ key until **Beepe**r shows on the display.
4. Press **OK**.

8.0 Error Messages

Faults or malfunctions identified by the instrument are indicated by an error message appearing on the display:

Batteries are empty:
Please insert new batteries.

Probe is too close to metal:
The probe was too close to the metal during switch-on. Hold the probe free in the air and then switch the instrument on.

Magnetic interference fields:
Close to the probe are too strong magnetic interference fields (e.g. transformers, PC-display screens).

Probe defective:
If this error message appears, please send the instrument to your supplier or to the manufacturer for repair.

Other errors:
If the following errors appear on your instrument
- Instrument does not allow any further measurements
- Illogical display values

a total reset usually helps (see page 9)

3.2 Selecting Units of Measure (µm-metric or inch-mils)

1. Press ▼ repeatedly until display shows **Options**.
2. Press **OK**. The display shows **Measuring Unit**.
3. Press **OK**. The display shows **µm unit**
4. Press **OK** to confirm **µm** as unit of measurement *OR*
5. Press ▼ again. The display shows **mils unit**.
6. Press **OK** to confirm **mils** as unit of measurement

The selected unit of measure (mils or µm) will appear on the display, followed by the start screen - - - -.

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The selected backlight state will appear on the display briefly, followed by the start screen - - - -.

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To turn the audible signal on and off:

1. Press the ▼ key until **Options** shows on the display.
2. Press the **OK** key.
3. Press the ▼ key until **Beepe**r shows on the display.
4. Press **OK**.

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8.0 Error Messages

Faults or malfunctions identified by the instrument are indicated by an error message appearing on the display:

Batteries are empty:
Please insert new batteries.

Probe is too close to metal:
The probe was too close to the metal during switch-on. Hold the probe free in the air and then switch the instrument on.

Magnetic interference fields:
Close to the probe are too strong magnetic interference fields (e.g. transformers, PC-display screens).

Probe defective:
If this error message appears, please send the instrument to your supplier or to the manufacturer for repair.

Other errors:
If the following errors appear on your instrument
- Instrument does not allow any further measurements
- Illogical display values

a total reset usually helps (see page 9)

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- Do not expose the window of the infrared adapter to direct solar radiation.
- Do not operate any filament and halogen lamps in the immediate vicinity of the adapter. The distance between adapter and lamp should be more than 1 meter.
- The infrared windows of the test instrument and of the adapter must be parallel and facing each other at a distance of around 30 cm to 50 cm.

After pressing **OK** to start infrared data transmission, keep the gauge´s infrared window pointed at the IR adapter as long as the green LED is lit.

5. Press the ▼ key to select the on or off states.
6. Press **OK** to confirm your selection

3.5 Manually Setting Measurement Mode (DCFN only)

In some cases, especially with varnish applied to zinc on steel, it is advisable to manually set the measuring mode—F mode (Ferrous) for measurements on steel/iron, N mode (Non-Ferrous) for measurements on non-ferrous metals.

1. Press ▼ repeatedly until display shows **Options**.
2. Press **OK**. **Measuring Unit** appears on the display.
3. Press ▼ repeatedly until **Measuring Mode** appears.
4. Press **OK**. **Auto FN Identifications** appears.
5. Press ▼ repeatedly until either **Ferrous (F)** or **Non-Ferrous (N)** or **Auto FN** appears on the display.
6. Press **OK** to confirm the measurement mode that you want to activate. The display shows - - - - and either **Auto FN** or **Ferr** or **Non-Ferr.** See diagram of dsiplay on page 3.

3.6 Total Reset To Factory Defaults

This procedure deletes all single and statistical values. It also deletes set calibration values and optional items and resets the gauge to the factory default.

1. Switch off the gauge
2. Press and hold the **ESC** key (item E, page 4). At the same time turn the power back on.
3. An acoustic signal will sound and all factory default settings are restored.
4. **Release both keys** and the gauge will restart with all factory default settings restored.

- Do not expose the window of the infrared adapter to direct solar radiation.
- Do not operate any filament and halogen lamps in the immediate vicinity of the adapter. The distance between adapter and lamp should be more than 1 meter.
- The infrared windows of the test instrument and of the adapter must be parallel and facing each other at a distance of around 30 cm to 50 cm.

After pressing **OK** to start infrared data transmission, keep the gauge´s infrared window pointed at the IR adapter as long as the green LED is lit.

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5. Press the ▼ key to select the on or off states.
6. Press **OK** to confirm your selection

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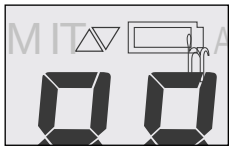
3.7 Battery Replacement



3000FX gauges use two AA alkaline or rechargeable batteries. When battery power becomes low the **Battery Indicator** will flash. The gauge will continue to operate, but batteries should be replaced as soon as possible When battery power is depleted, the Battery Indicator remains on continuously, indicating that less than 60 seconds of power remain shut down.

Replacing batteries

1. Turn the gauge over. Slide the release switch down to unlock the battery compartment.
2. Carefully pull the battery compartment cover away from the gauge.
3. Insert new batteries, following the polarity diagram on the inside of the battery compartment.
4. Replace the battery compartment cover by inserting the hooks at the bottom edge, then pushing the cover forward until it snaps into position.
5. Slide the release switch up to lock the cover in place.

NOTE: Battery exchange should be accomplished within 20 seconds to preserve saved measurement data.

7.0 Data Transfer

For data transfer from a 3000FX series gauge to a PC you must not use a possible enclosed drive disc. For the infrared data transmission from the gauge to a printer or to a PC, the following three requirements must be met:

1. The infrared adapter (accessory part) must be connected to the printer or PC. The infrared window of the gauge and of the adapter must be parallel and face each other at a distance of approximately 12” to 20” *(30cm to 50cm*) for the data transmission.
2. The serial interface parameters of the PC and the printer must be set as follows:

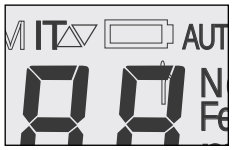
Baud rate:	9600
Data bits:	8
Stop bit:	1
Parity:	none
Handshake	non

3. A data transmission program must be installed for the data transmission to a PC.

General information regarding the infrared data transfer using 3000FX

It is of special importance with reference to the infrared data transfer that the transmitted light-induced pulses can be perfectly received and evaluated. The infrared adapter receiving the light-induced pulses must therefore be protected from any external interferences. For this reason, please observe the following:

3.7 Battery Replacement



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- 10 -

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- 19 -

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed.

To print statistical values:

1. Press ▼ repeatedly until **Statistics** appears n display.
2. Press **OK**. **Printout Of Statistics** appears.
3. Point instrument with the IR transmitter (top end face) towards the IR adapter installed on the printer. The distance should be approx. 12” to 20” (*30cm* to *50cm*).
4. Press **OK**. The data are transmitted, and **Printing...** will briefly appear, followed by the start screen with the four dashes - - - -.

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed again.

6.4 Deletion of statistical values and of single values

1. Press ▼ repeatedly until **Statistics** appears on display.
2. Press **OK**. **Printout Of Statistics** appears
3. Press ▼ repeatedly until **Deletion Of Statistics** appears
4. Press **OK**. The statistical values with the single values are deleted. Statistics deleted will briefly appear on the display, then the start screen with the four dashes - - - - .

Quick deletion of statistics and stored readings

1. Press **ESC** repeatedly until the start screen with the four dashes - - - - is again displayed.
2. Press **ESC** until **Deleted Statistic?** appears on the display.
3. Press **ESC** again. **Statistics Deleted** will briefly appear, then the start screen with the four dashes - - - -.

Using Rechargeable batteries

When using rechargeable batteries, the battery symbol always flashes, because rechargeable batteries provide a lower voltage than non-rechargeable batteries. To eliminate this situation:

1. Press ▼ repeatedly until **Options** appears on the display.
2. Press **OK**.
3. Press ▼ until **Power Supply** appears on the display.
4. Press **OK**.
5. Press ▼ until **Rechargeable Batteries** appears on the display.
6. Press **OK**.

Supply with Rechargeable Batt appears briefly on the screen, followed by - - - . The procedure is complete.

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed.

To print statistical values:

1. Press ▼ repeatedly until **Statistics** appears n display.
2. Press **OK**. **Printout Of Statistics** appears.
3. Point instrument with the IR transmitter (top end face) towards the IR adapter installed on the printer. The distance should be approx. 12” to 20” (*30cm* to *50cm*).
4. Press **OK**. The data are transmitted, and **Printing...** will briefly appear, followed by the start screen with the four dashes - - - -.

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed again.

6.4 Deletion of statistical values and of single values

1. Press ▼ repeatedly until **Statistics** appears on display.
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Quick deletion of statistics and stored readings

1. Press **ESC** repeatedly until the start screen with the four dashes - - - - is again displayed.
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Supply with Rechargeable Batt appears briefly on the screen, followed by - - - . The procedure is complete.

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4.0 CALIBRATION

4.1 Measuring Using Factory (Works) Calibration

1. Press ▼. **Calibration** appears on the display.
2. Press **OK**. **Zero Setting** appears on the display.
3. Press ▼ repeatedly until **Delete Calibration** appears.
4. Press **OK**. **Works Calibration Activated** appears briefly, then the start screen with - - - -. You can now carry out the measurement.

4.2 One-point calibration (zero procedure)

This procedure requires an uncoated test object having similar dimensions and material properties to those of the coated object to be measured.

1. Press ▼. **Calibration** appears on the display.
2. Press **OK**. **Zero Setting** appears.
3. Place the Measuring Sensor (item G, page 4) on the test object at a right angle. Press gently and hold until chime sounds, then lift up. Repeat several times.
4. Press **OK. Zero has been set** appears briefly on the display, followed by the start screen with the four dashes - - - -.

You can now carry out the measurement.

4.3 Two-point calibration (using calibration foil)

As with Zero setting, this procedure requires an uncoated test object having similar dimensions as the coated object that will be measured. Choose a calibration foil that is closest to the expected coating layer thickness.

3. Press ▼ until **Display of Single Values** appears.

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed.

To print single values:

1. Press ▼ repeatedly until **Statistics** appears on display.
2. Press **OK**. **Printout Of Statistics** appears
3. Press ▼ repeatedly until **Printout of Single Values** appears
4. Point instrument with the IR transmitter (top end edge) towards the IR adapter installed on the printer. The distance should be approx. 12” to 20” (*30cm* to *50cm*)
5. Press **OK**. The data are transmitted, and **Printing...** will briefly appear, followed by the start screen with the four dashes - - - -.

To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed again.

6.3 Display and print statistical values

To display statistical values:

1. Press ▼ repeatedly until **Statistics** appears on display.
2. Press **OK. Printout Of Statistics** appears.
3. Press ▼ repeatedly until **Display Of Statistics** appears.
4. Press **OK** repeatedly. Each time OK is pressed, a different statistical value will be displayed in this order: N, $\overline{x}$, s, and then N, Max, Min. At the conclusion, Display of Statistics appears again and the sequence of statistics displayed will repeat.

4.0 CALIBRATION

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- 12 -

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To continue measuring, press **ESC** repeatedly until the start screen with the four dashes - - - - is displayed.

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1. Press ▼ repeatedly until **Statistics** appears on display.
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6.0 MANAGING SINGLE AND STATISTICAL VALUES

The 3000FX gauge is provided with online statistics. The statistical values are re-calculated and displayed in the two bottom lines after everymeasurement.The statistical values calculated by the 3000FX gauges are:

N: Number of measured values
x: Average of measured values
s: Standard deviation
Max: Maximum single value of the measurement series
Min: Minimum single value of the measurement series

Note: The DCFN-3000FX can store a total of 80 readings combining the F-mode N-mode, not 80 readings in each mode (160 total).

6.1 Selecting which statistical values will be displayed.

1. Press ▼ repeatedly until Options appears on the display.
2. Press **OK**.
3. Press ▼ Until **On-Line Statistics** appears on the display.
4. Press **OK**.
5. Press ▼ to select either Maximum and Minimum or Mean and Std Deviation for display.
6. Press **OK** to confirm your selection.

6.2 Displaying and printing single values

To display single values:

1. Press ▼ repeatedly until **Statistics** appears on display.
2. Press **OK**. **Printout of statistics** appears on the display.

1. Carry out a zero procedure (see section 4.2).
2. Press ▼. **Calibration** appears on the display.
3. Press **OK**. **Zero Setting** appears
4. Press ▼ again. **Foil Calibration** appears.
5. Press **OK**. Place probe on foil. **Standard** appears.
6. Put the measurement foil on the uncoated test object and place the probe repeatedly on the foil.
7. Press ▼ or ▲ until the displayed value agrees with the thickness value of the calibration foil.
8. Press **OK**. **Calibration has been set** appears briefly, then the start screen with four dashes - - - - appears.

You can now carry out the measurement

4.4 Zero Offset

In this menu item, a constant positive or negative value can be set. This value is automatically added to the measured value or subtracted from the measured value every time a measurement is carried out. The display then shows the addition or the difference. Moreover, the zero offset setting is always indicated below in the display as a reminder.

This measuring mode is useful when determining the upper coating layer of a multi-layer system. If the lower layer(s) is (are) known and show an adequately uniform thickness, the coating thickness of this (these) layer(s) can be set as a negative offset value. The display then only shows the thickness of the top layer.

When measuring coated rough metal surfaces, this mode can also be selected. In this case, the roughness effect, which is determined on the basis of the uncoated rough metal surface, is

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When measuring coated rough metal surfaces, this mode can also be selected. In this case, the roughness effect, which is determined on the basis of the uncoated rough metal surface, is

- 13 -

set as a negative offset value. The instrument will then display the coating thickness above the peaks of the rough surface.

Setting Zero Offset Value

1. Press ▼**. Calibration** appears on the display'
2. Press **OK**. **Zero Setting** appears on the display
3. Press ▼ twice. **Zero Offset** appears on the display.
4. Press **OK**. **Offsets** appears on the display.
5. Press **OK**. **Set Offset Value** appears on the display.
6. Press ▼ or ▲ repeatedly until the required offset value appears on the display.
7. Press **OK**. **Offset Has Been Set** appears on the display briefly, followed by the start display with - - - -.

Deleting Zero Offset Value

1. Press ▼ **Calibration** appears on the display
2. Press **OK**. **Zero Setting** appears on the display
3. Press ▼ twice. **Zero Offse**t appears on the display
4. Press **OK**. **Setting of Offset** appears on the display
5. Press ▼. **Deletion of Offset** appears on the display
6. Press **OK**. **Offset Deleted** appears briefly, followed by the start display with the four dashes - - - -.

5.0 Setting Audible Limit Alerts

To monitor your measured values, you can set an upper and a lower limit value. This setting is useful during the measurement, for the evaluation of the measured values later when displaying the single values or for the printout of measured values If the limit value is exceeded or if it's not reached, an audio signal will sound, and a warning note will appear on the display (_ or _).

Setting

1. Press ▼ repeatedly until **Limits** appears on the display
2. Press **OK**. **Limits Setting** appears on the display.
3. Press **OK** again. **Set Lower Limit** appears.
4. Press ▼ or ▲ repeatedly until the desired lower limit value appears on the display.
5. Press **OK**. **Set Upper Limit** appears on the display.
6. Press ▼ or ▲ repeatedly until the desired upper limit value appears on the display.
7. Press **OK**. **Limits have been set** will appear briefly, then the start screen with - - - -.

Deleting

1. Press ▼ repeatedly until **Limit s** appears on the display.
2. Press **OK**. **Limits Setting** appears
3. Press ▼ until **Deletion of Limits** appears
4. Press **OK**. **Limits Deleted** appears briefly, followed by the start screen with - - - -.

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Setting Zero Offset Value

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Coating Thickness Gauges

DCF-3000FX, DCN-3000FX, DCFN-3000FX

Operating Instructions

CHECK·LINE® INSTRUMENTS
ELECTROMATIC
EQUIPMENT CO., INC.
600 Oakland Ave., Cedarhurst, NY 11516–U.S.A.
TEL: 516-295-4300 • FAX: 516-295-4399

www.checkline.com

OI507-FX
CHECK·LINE®
BY ELECTROMATIC

Coating Thickness Gauges

DCF-3000FX, DCN-3000FX, DCFN-3000FX

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