

Paint Test Equipment

Eban 4000 Coating Thickness Meter Data Sheet





Complies with International Standards

Ferrous Models	Non-Ferrous Models	Ferrous & Non-Ferrous
ISO 2178	ISO 2360	ASTM E 376
ISO 2808-6Aa	ISO 2808-6Ba	All of the Ferrous and Non-Ferrous list
BS 5411-11	BS 5411-3	
BS 3900-C5-6Aa	BS 3900-C5-6Ba	
BS EN ISO 1461	BS 5599	
ASTM B 499	ASTM D 1400	
DIN 5098	ASTM B 244	
prEN ISO 19840	DIN 50984	

Eban 4000

The Eban 4000 Coating Thickness Meter easily measures all coatings on metallic substrates using the magnetic induction or eddy current principles, ensuring the correct coating thickness has been applied.

One of the most advanced Coating Thickness Meters on the market, the Eban 4000 uses up-to-date technology and offers a small, portable instrument incorporating all the required user functions.

Available in models of Standard and Top. All functions are easily accessible through a menu-driven back-lit display.

Standard Models

Calibration

Calibrate on any blasted profile or shape of substrate using the Calibration Foils supplied.

Calibration Memories

The calibration settings for different substrates and shapes can be stored and recalled when required, saving time on recalibration.

Statistics

Continually shows Mean, Number of Readings, Max/Min, Coefficient of Variation and Standard Deviation.

Hi/Lo Limits

Pass and fail with audible and visual alarm.

Metric/Imperial

Select the measurement units that you require.

Top Models

All the functions of Standard Models plus the following:

Batching

Measurements that are taken can be stored into batches which incorporate batch number, unique job number, and date and time. You can also go back to previous batches and look at the statistics and add or cancel readings from previous batches.

Download

Allows all measurements, statistics and out-of-limit readings to be downloaded to a computer either by batch number or job number into Microsoft Word or Excel. Your company name can appear on every download if required.

Calibration Certificates with traceability to UKAS are an optional extra. The Certificates are supplied in a paper format and are available online through the Calibration Portal (under Browse Categories) on our website. The Calibration Portal will list all your equipment that is calibrated by Paint Test Equipment, showing the renewal dates and allowing Calibration Certificates to be viewed at any time.

Eban 4000 Probe Specifications

Probe	Probe Diameter	Working Headroom	Minimum Convex Radius	Minimum Concave Radius	Minimum Sample Area
Ferrous Straight 0–1000µm	9mm / 360mils	75mm / 3"	4mm / 160mils	25mm / 1"	4mm / 160mils
Ferrous Right Angle 0–1000µm	9mm / 360mils	40mm / 1.5"	4mm / 160mils	25mm / 1"	4mm / 160mils
Ferrous Straight 0–2000µm / 0–5mm	15mm / 600mils	75mm / 3"	10mm / 400mils	50mm / 2"	10mm / 400mils
Ferrous Straight 0–20mm	50mm / 2"	150mm / 6"	100mm / 4"	500mm / 20"	100mm / 4"
Non-Ferrous Straight 0–1000µm	10mm / 400mils	75mm / 3"	5mm / 200mils	25mm / 1"	5mm / 200mils
Non-Ferrous Right Angle 0–1000µm	10mm / 400mils	40mm / 1.5"	5mm / 200mils	25mm / 1"	5mm / 200mils
Non-Ferrous Straight 0–2000µm	10mm / 400mils	75mm / 3"	5mm / 200mils	25mm / 1"	5mm / 200mils

Eban 4000 Specifications

Part No	Probe Type	Model Type	Substrate	Range Metric	Range Imperial	Resolution Metric	Resolution Imperial	Accuracy	Cal Cert Part No	Foil Cert Part No
C4001	Straight	Standard	Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4002	Right Angle	Standard	Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4003	Straight	Standard	Ferrous	0–2000µm 0–5mm	0–80mils 0–200mils	1µm 0.01mm	0.1mil	±1 to 3%	NC001	NC002
C4004	Straight	Standard	Ferrous	1–20mm	40–800mils	0.1mm	0.1mil	±1 to 5%	NC001	NC002
C4005	Straight	Standard	Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4006	Right Angle	Standard	Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4007	Straight	Standard	Non-Ferrous	0–2000µm	0–80mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4008	Straight	Standard	Ferrous and Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4009	Right Angle	Standard	Ferrous and Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4010	Straight	Standard	Ferrous and Non-Ferrous	F 0–2000µm F 0–5mm N 0–2000µm	0–80mils 0–200mils 0–80mils	1µm 0.01mm 1µm	0.1mil	±1 to 3%	NC001	NC002
C4101	Straight	Top	Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4102	Right Angle	Top	Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4103	Straight	Top	Ferrous	0–2000µm 0–5mm	0–80mils 0–200mils	1µm 0.01mm	0.1mil	±1 to 3%	NC001	NC002
C4104	Straight	Top	Ferrous	1–20mm	40–800mils	0.1mm	0.1mil	±1 to 5%	NC001	NC002
C4105	Straight	Top	Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4106	Right Angle	Top	Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4107	Straight	Top	Non-Ferrous	0–2000µm	0–80mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4108	Straight	Top	Ferrous and Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4109	Right Angle	Top	Ferrous and Non-Ferrous	0–1000µm	0–40mils	1µm	0.1mil	±1 to 3%	NC001	NC002
C4110	Straight	Top	Ferrous and Non-Ferrous	F 0–2000µm F 0–5mm N 0–2000µm	0–80mils 0–200mils 0–80mils	1µm 0.01mm 1µm	0.1mil	±1 to 3%	NC001	NC002

Ferrous models will measure all non-ferromagnetic coatings on steel and iron.

Non-Ferrous models will measure all non-conductive, non-ferromagnetic coatings on conductive Non-Ferrous substrates.

All models are supplied with flexible lead Measuring Probes, set of 8 Calibration Foils, Zero Disks and foam-filled Carrying Case. Top Models also come with USB Download Cable and Download Software.

Operation

Switch On / Off

To switch the Eban 4000 on, press the On / Off keypad for approximately 1 second. The display will show the last reading taken. The instrument will automatically switch off after approximately 5 minutes if no readings have been taken. The instrument can also be switched off by pressing the On / Off keypad again.

Taking Readings

Ensure that the correct probe for the substrate is selected. If you have a combined Ferrous and Non-Ferrous Eban 4000, the display will show if a Ferrous or Non-Ferrous Probe is connected once a reading has been taken. Place the Probe onto the surface to be measured; there will be a double beep and the reading will be displayed. This reading will be retained on the display until replaced by the next reading.

Connecting Probe

Plug the Probe into the 4-pin connector located on the bottom of the Eban 4000 (take care to align the red dots before pushing the plug in).

Menu

All functions are accessed through a menu-driven display in the categories shown below. To scroll through the menus use the up and down arrows and enter where you see the arrow symbol on the right of the display. When you are in the Menu and you want to exit, press the Menu button again and the instrument will revert back to normal measurement mode.

Calibration

	The Eban 4000 can be checked for the calibration at any time by using the Calibration Foils and Zero Disks supplied.
Zero & Cal	<p>This function will work from Factory Cal (standard calibration) or Operator Cal (special calibration).</p> <p>For the highest accuracy of measurement, the Eban 4000 has a variable calibration facility, allowing precise measurements to be obtained on virtually all substrate types. The Zero is carried out by placing the Probe onto an uncoated substrate or Zero Disk: this will set the zero value.</p> <p>The Cal is carried out by placing a calibration foil on the same uncoated substrate or Zero Disk (select the foil value to be just above the coating thickness value to be measured). Place the Probe on this foil and enter the foil value into the instrument. Measurements can now be made in the range from 0 to the foil value.</p>
Factory Cal	<p>When selected this will reset the instrument to a standard calibration. If you are using a combined Ferrous and Non-Ferrous instrument, the calibration is only reset to the substrate that you have selected.</p> <p>Calibration Foils are not required for this calibration. Calibrations stored in Cal Memories are not affected. Limit settings, if selected, will be cleared.</p>
Operator Cal	<p>This calibration allows the operator to access a special calibration curve that has been set up under Control in the Menu. This will assist in overcoming inaccuracies due to slight probe wear.</p> <p>When selected, the operator can still use the other functions under Calibration. Factory Cal will revert the instrument back to the standard calibration.</p>
Profile	<p>This facility allows a special zero calibration that will assist in calibration on blast-cleaned surfaces and will also allow a top coat to be measured in a multiple-coating application, for example if a coating of 25 microns has another coating of 50 microns applied then the Profile feature will allow the operator to zero the Eban 4000 on the 25 micron coat, and the instrument will measure the top coat only.</p> <p>To use this facility, the operator must first select Factory Cal.</p>
Cal Memories	<p>For specific calibrations that have to be retained on a temporary basis the Eban 4000 has nine calibration memories, which will retain any special calibrations. These can be recalled when required: for example, the current calibration can be stored under Cal Memory 1, then the calibration can be changed for another job and saved under Cal Memory 2. Then if required the first stored calibration can be recalled from Cal Memory 1.</p>



Clear Memory

Clears the instrument memory of all batches and stored readings. Does not affect calibration values and Cal Memories.

Statistics

At any time the appropriate Statistics can be displayed on the lower line of the display. The Statistics will be automatically updated when additional readings are taken.

Mean	Average of all readings.
Number Readings	Number of readings taken.
SDV	Standard Deviation of readings taken.
Coefficient	Coefficient of variation of readings taken $(SDV/Mean)*100$.
Maximum	Maximum reading.
Minimum	Minimum reading.
Statistics Off	Removes the displayed Statistics.

Batching

This function is only available on Eban 4000 Top Models.
Multiple batches can be stored to a maximum of 10,000 readings.

Batch Store	Readings taken can be stored in a batch and a job number allocated (up to 12 digits). Multiple batches can be stored with a maximum of 100 readings per batch. The 100th reading taken will automatically enter into a batch and you will be asked to enter the job number.
Batch Recall	Previous batches stored can be recalled either by batch number or by job number, so that further readings can be added. Statistics viewed or job number can be changed.
Auto Batch	A batch quantity can be allocated and the instrument will automatically enter the batch and you will be asked to enter the job number when this quantity of readings has been taken (the maximum batch limit is 99 readings).
Batching On/Off	Always ensure that Batching is On if you need to store readings. When you do not need to store readings switch the Batching Off. This will allow you to take readings further than 100 without automatically being stored into a batch. When changing Probes on combined Ferrous and Non-Ferrous instruments with Batching On, your readings will automatically be entered into a batch and you will be asked to enter the job number.

Download

This function is only available on Eban 4000 Top Models.
This enables the batches stored to be downloaded to a computer with the Paint Test Equipment Downloader installed. Connection is made using the USB Cable (download instructions are available on the Help file in the program). The batches downloaded can then be entered into Word or Excel.

By Batch Number	Download single or multiple batches by batch number. By entering a zero batch, all batches will be downloaded.
By Job Number	Download single or multiple batches by job number.



Control

Check Bat Life	Battery life can be examined to determine the percentage of the battery life that is available. Low Battery will appear on the display when the batteries require replacement. To replace, remove the cover located on the rear of the instrument. Replace with 2 alkaline AAA batteries, ensuring correct polarity. All readings and calibrations stored in the memory will not be affected by the battery change.
Set Limits	Limits can be set to establish a High and also a Low pass / fail threshold. For out-of-limit readings an error display will be shown and the alarm will be sounded. The error amount will be shown as a percentage, which is the difference between the set High or Low limit and the particular reading. To remove Limits press Clear Entry instead of entering numbers when setting limits.
Set Date/Time	The date and time can be set. This will be recorded with every batch stored, and appear on all batches downloaded.
Op Cal Set	Enables the operator to create a special calibration curve by entering 8 Calibration Foil values. This will assist in overcoming inaccuracies in the calibration due to slight probe wear. The Zero is carried out by placing the Probe onto the Zero Disk: this will set the zero. You can then enter the values of the 8 Calibration Foils by placing the lowest value foil onto the Zero Disk, place the Probe on this foil and enter the foil value into the instrument. You can then enter the other foils in order of value. The instrument will revert to normal measurement mode when the last foil value has been entered. Once set up, the calibration curve can be accessed through Operator Cal under Calibration in the Menu.
Micron/Thou	Allows the instrument to operate either in metric or imperial measurements.
Eng Mode	This function is for Paint Test Equipment use only.
Install Name	The Eban 4000 can be personalised with your company, department or operator's name. This will appear on every download and on the instrument at switch on. By entering the following Ascii codes the name can be entered: A-65, B-66, C-67, D-68, E-69, F-70, G-71, H-72, I-73, J-74, K-75, L-76, M-77, N-78, O-79, P-80, Q-81, R-82, S-83, T-84, U-85, V-86, W-87, X-88, Y-89, Z-90, a-97, b-98, c-99, d-100, e-101, f-102, g-103, h-104, i-105, j-106, k-107, l-108, m-109, n-110, o-111, p-112, q-113, r-114, s-115, t-116, u-117, v-118, w-119, x-120, y-121, z-122. Space character-32. When Enter is pressed without a character input, then the display will exit to normal measurement mode.
Select Probe	This function is only available on instruments with the ferrous range of 0–2000µm / 0–5mm. On other models this function will not be shown. This gives the operator the option of selecting either a 0 to 2000µm measurement range with a display resolution of 1 micron, or a 0 to 5.00mm measurement range with a display resolution of 0.01mm.
Probe Speed	Select a fast or slow reading speed when the probe is placed on the surface.

About us

Paint Test Equipment are manufacturers of a comprehensive range of specialist instruments for the Industrial Coatings and Finishings Industries and have been supplying instruments to customers worldwide for over 25 years.

During this time Paint Test Equipment have established a reputation for manufacturing quality instruments to the highest specification, to meet the demanding requirements of the Industrial Painting Industry.

Recalibration

Paint Test Equipment can service and recalibrate all applicable products that we supply.

We recommend that the equipment is returned on a 12-monthly basis to Paint Test Equipment for service and recalibration.

Calibration Certificates will have traceability to UKAS or BAM. The Certificate is supplied in a paper format and is available online through the Calibration Portal (under Browse Categories) on our website. The Calibration Portal will list all your equipment that is calibrated by Paint Test Equipment, showing the renewal dates and allowing Calibration Certificates to be viewed at any time.

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