FX21

LIVESTOCK WEIGHING SYSTEM

MANUAL

CONTENTS

1. SYSTEM CARE

The FX21 weighing system has been designed to work reliably for long periods of time under adverse conditions. However like any equipment, common sense and care will assist in keeping it in good operating condition.

ESSENTIAL CARE

♦ Fit caps to cable ends and indicator sockets when not in use to protect from dirt and moisture. Hang the cable ends up, out of mud and dust.

♦ Damage may occur if the capacity of the scale is exceeded.

♦ Loadbar cables must be kept in good condition.

BATTERY CARE

IMPORTANT !
BATTERY LIFE WILL BE CONSIDERABLY SHORTENED
IF IT IS NOT PROPERLY CARED FOR

♦ Always recharge the battery with the *Iconix* AC Adaptor provided for 8 - 12 hours **AFTER USE** with the loadbars disconnected from the indicator.

♦ For long term storage, recharge ONCE PER MONTH with the loadbars disconnected.

♦ When the battery is low on charge (the LOW BAT pointer ▲ is on), weighing may continue by connecting the AC Adaptor if mains power is available or by using the battery clip leads to connect to an external 12V battery.

♦ The AC Adaptor should not be left plugged into the indicator for long periods of time.

SITE PREPARATION

♦ The choice of weighing site is important for accurate weighing and ease of use.

♦ A well chosen site that is level will ensure the best conditions for accurate weighing.

♦ he loadbars must be bolted to the platform or crate and be firmly attached to the ground or concrete pad.

♦ Any rocking or twisting of the platform could result in weighing errors.

♦ Adequate clearance around the platform is essential. Any binding or rubbing with posts or gates will produce weighing errors.

♦ The race bracket is best mounted on a fence or post and not the crate.

♦ Mount the indicator in a well lit position for best readability.

♦ A well chosen site will help animals flow smoothly through the system.

♦ Mounting the indicator away from the crate will help to keep hands free of the crate when the weigh cycle is started.

2. OPERATING INSTRUCTIONS

GETTING STARTED

♦ Connect the two loadbar cables to the loadbar sockets marked on the rear of the indicator.

    Either: Use the internal rechargeable battery. Ensure that the battery is fully charged.

    or: Use the *Iconix* AC adaptor

    or: Attach the optional battery cable to the FX21 and clip onto a 12V DC battery (car, tractor battery etc.). ENSURE CORRECT POLARITY: red clip to **+**, black clip to **—**.

The internal battery cannot be recharged from an external battery, however it can be handy for continuing to weigh when the internal battery is flat.

♦ Press the **ON** key. The FX21 initially displays the firmware version number e.g. '*P 5.0 1*'.

♦ Then the FX21 shows the currently selected group (mob file), for example '*G r P   3 8*', which is the same as the group last used in the previous weighing session. If this is a new weighing session, you will probably want to select a new group from the range 1 to 99. See the section GROUPS (MOB FILES).

♦ The scale will automatically return to zero. When complete, the ZERO pointer ▲ will show that the scale is at zero.

    NOTE: If a large load (such as a partly filled wool bale in a wool press) remains on the scale from previous use, the last weight will be displayed. The operator can continue the weighing session from where last finished. Alternatively, press **ZERO** to return the scale to zero.

♦ Check that the ZERO pointer ▲ is displayed. Load the animal onto the platform.

♦ Press **WEIGH**. The animal is accurately weighed and the result locked on the display (in HOLD mode). A new record is added to the currently selected group in memory.

    The record consists of:

        Tag Number (if used), Group, Condition Score (if used), Weight

♦ Remove the animal from the weighing platform. The last animal's weight remains locked on the display. Check that the ZERO pointer ▲ is displayed between animal weighings. If the ZERO pointer does not appear, hold the next animal back, keep hands etc. clear of the crate and press **ZERO**. The scale will be returned to zero and the weighing session can proceed.

♦ At the end of the weighing session, switch the indicator **OFF**.

♦ Recharge the internal battery overnight (see BATTERY CARE section above). It is very important for battery life to store the FX21 with the battery fully charged.

> **IF THE FX21 IS DETACHED FROM THE LOADBARS, ENSURE THAT THE WEATHERPROOF CAPS ARE FIRMLY INSTALLED ON ALL CONNECTORS**

WEIGH MODE KEY

The **WEIGH MODE** key allows the operator to change the weighing mode to FREE or one of three types of HOLD mode. FREE and HOLD pointers ▲ on the display show which mode is selected

FREE Mode   '*F r E E*'

The display is continuously updated with the weight currently on the scale. If **WEIGH** is used, the averaged weight is briefly displayed and added to the statistics. FREE mode is suitable for static load weighing, not for weighing animals.

HOLD Mode   '*H O L d*'

Pressing **WEIGH** starts an averaging process, which then displays the accurate weight of the animal. A new record is added to memory. The weight is locked on the display until the next key press.

Auto-Drafting Option: When the Auto-Drafting option is enabled in Set-Up, there are two additional settings available when **WEIGH MODE** is pressed.

SPEED Mode   '*S P E E d*'

A fast version of the standard HOLD mode with a 1.3 second weigh time. Only for use with special crates that restrict animal movement, allowing faster weighing. For example, the Racewell Industries sheep crate and Rite-Weigh portable sheep crate.

HIGH SPEED Mode '*H.S P E E d*'

The fastest version of the standard HOLD mode with a 0.7 second weigh time. Only suitable for use with special crates that restrict animal movement, allowing faster weighing. For example, the Racewell Industries sheep crate.

WEIGH KEY

To weigh an animal on the scale, press **WEIGH**. The animal is accurately weighed and the result locked on the display (in HOLD mode). A new weight record is added to memory. For a complete description of the weighing process, see the GETTING STARTED section above.

DUPLICATE TAG NUMBERS

If a tag number is repeated, when **WEIGH** is pressed, 'dUPL' is alternately displayed with the tag number.

If the number is correct, press **WEIGH** again to continue (noting that the ***previous*** use of that number is probably incorrect).

If incorrect, use **DELETE** one or more times, then re-enter.

Zero is not considered to be a valid tag number, so repeated use is permitted.

The FX21 is factory set with this feature enabled. See Set-Up section for details on disabling.

DELETE KEY

The **DELETE** key has 3 functions:

♦   If there has been a problem with the weighing, press **DELETE** to delete the last weighing record from memory. '*d E L E t E*' is displayed as confirmation. It is only possible to delete the last weighing immediately after the animal has been weighed. '*n o n E*' is displayed if deletion is not possible.

♦   When using the numeric keypad for entering Tag numbers, Group or Condition Score, use **DELETE** to remove the last entered digit (repeated use of **DELETE** is permitted).

♦   Clearing records (see CLEARING RECORDS section).

DRAFT LIMITS KEY

Draft limits may be set to allow sorting of animals into weight ranges. Both 2-way and 3-way drafting are possible.

NO DRAFTING: Set draft limits Draft 1 and Draft 2 to 0.0

2 WAY DRAFTING: Set one draft limit to the required weight and set the other to 0.0
The display will show H (high) or L (low) alongside the weight.

3 WAY DRAFTING: Set the draft limits to the required weights.
The display will show H (high), C (centre) or L (low) alongside the weight.

SETTING THE DRAFT LIMITS

Press **DRAFT LIMITS** for $drAFt.1$. Then enter the weight using the numeric keypad.

Press **DRAFT LIMITS** again for $drAFt.2$. Then enter the weight using the numeric keypad, if required.

Press **DRAFT LIMITS** again to return to the weighing mode.

Auto-Drafting Option: When the Auto-Drafting option is enabled, there are two additional settings available when **DRAFT LIMITS** is pressed. See the section AUTO-DRAFTING OPTION below.

GROUPS (MOB FILES)

A new record is stored (in permanent memory) in the selected group (mob file) whenever **WEIGH** is pressed. A record consists of:

Tag Number (if used), Group, Condition Score (if used) and Weight.

In normal operation, before starting a new weighing session, a previously unused group is selected from the range 1 – 99. At the end of the session, or at any time during, the statistics for the group may be displayed or printed. Individual records for the selected group may also be printed.

MEMORY CAPACITY: 7238 records in total for Version 4.01 onwards
3626 records in total for earlier versions

The version number of the FX21 is displayed at switch-on as '$P5.03$' for example.

The memory capacity may be shared between the groups in any manner. i.e. any number of groups may be used with any number of records in each, providing the total number of records does not exceed 7238 (3626). See the section below USING "ALL GROUPS" for how to check the total number of records that have been used.

When the record limit is reached, for a further press of **WEIGH** the message '$FULL$' will be displayed. No more records are able to be stored until some or all of the existing records are cleared. Usually records from a previous weighing session (stored in another group) can be cleared so that more records can be added to the currently selected group.

DISPLAYING AND SELECTING A GROUP

Press the ✻ key, then press *✻**GROUP** to display the selected group, for example '$GrP 25$' where Group 25 is selected.

To continue putting records into this group, press ✻ again to return to the normal operating mode.

Or, if a different group is required for the new weighing session, type the new group number from the range 1 to 99, for example 3 9, to display '$GrP 39$'.

To accept the new setting and return to the normal operating mode, press ✻.

To see whether the selected group already has records in it, check the statistics for the group using ✻ then *✻**WGT STATS**. See the STATISTICS section below.

USING "ALL GROUPS" (Group = 0)

Selecting '$G r P 0$' allows access to all records in memory, regardless of which groups individual records are stored in. The user may:

♦ View global statistics. See the STATISTICS section below. Average weight, total weight and the number of weighings etc. are the totals for all records in memory.
    Note: The total number of weighings will show whether the memory capacity of the FX21 will soon be reached (7238 or 3626 records, depending on version)

♦ Delete all records in memory. See the section CLEARING RECORDS below.

Note: '$G r P 0$' may not be used for storing records in a weighing session. If an attempt is made to do so, the message '$n o . 5 t o r$' is displayed briefly.

CLEARING RECORDS

To clear all records in the currently selected group:

♦ Ensure that the correct group for deletion is selected, by pressing the keys: ✱ *GROUP ✱

♦ Display any statistics function (see DISPLAYING STATISTICS below), then while any of the statistics are flashing on the display, press **DELETE**.

♦ The operator is then prompted with the message '$5 U r E ?$'.

♦ Press **DELETE** again within 2 seconds to confirm. '$d E L E t E$' is displayed if the file has been cleared. If **DELETE** is not pressed within 2 seconds, '$n o   d E L$' is displayed.

STATISTICS

Statistics apply to all records in the currently selected group. In the case of Group 0, statistics apply to all records in memory, regardless of which groups they are located in.

DISPLAYING STATISTICS

Press ✱ to display '$5 E L E C t$'.

Press the corresponding number key to select from:

   *WGT STATS, *AVG SCORE, *DRAFT NO's, *DRAFT WGTS or *DRAFT TOT.

While the statistics are calculated, '$b U 5 Y -$' is displayed briefly.

For example :

Press *WGT STATS:	$n o .$	=	number of animals weighed is displayed
Press *WGT STATS again:	$A U G$	=	average weight is displayed.
Press *WGT STATS again:	$t o t A L$	=	total weight of animals is displayed.

Press *WGT STATS again to return to the normal weighing mode ('$E n d$' is displayed) OR press any other statistics key (eg *DRAFT NO's) to begin displaying a different set of statistics:

*DRAFT NO's:	H	=	number of animals in High Group
	C	=	number of animals in Centre Group
	L	=	number of animals in Low Group
*DRAFT WGTS:	H	=	average weight of animals in High Group
	C	=	average weight of animals in Centre Group
	L	=	average weight of animals in Low Group
*DRAFT TOT:	$t o t A L . H$	=	total weight of animals in High Group
	$t o t A L . C$	=	total weight of animals in Centre Group
	$t o t A L . L$	=	total weight of animals in Low Group

***AVG SCORE**: displays the average condition score for the selected group, taking into account only non-zero scores. For example: $5\mathcal{L}$ 5.6

QUICK EXIT

Whenever statistics are flashing, you may press ✱ for a quick exit back to the weighing mode. '$\mathcal{E}\cap\mathcal{d}$' is displayed.

"WHAT IF" DRAFTING STATISTICS

Since statistics are recalculated on entry, you may change the draft limits and re-examine the drafting statistics to determine how many animals would have been drafted into each weight range with different settings.

ICONIX FX PRINTER OPTION

The *Iconix* FX Printer is a rugged, portable printer that uses standard adding machine paper rolls. It is powered from the internal battery of the FX21 indicator.

NOTE: The FX21 must be set to a baud rate of 4800 when using the FX Printer. See the Set-Up section for details on how to do this.

For a printed copy of statistics or records, plug the printer into the connector labelled **Optional I/O** at the back of the indicator.

Press ✱, then ***PRINT RECS** to print all records in memory for the selected group (arranged with tag numbers in numeric order).

Press ✱, then ***PRINT STATS** for a full statistics printout for the selected group.

If a printout is required of all records in memory, or the statistics for all records, select Group 0 before doing the printouts. See USING ALL GROUPS above.

IMPORTANT NOTE:

The **Optional I/O** connector is reserved for the use with the *Iconix* FX Printer and the *Iconix* Auto-Draft Controller. **DO NOT ATTACH ANY OTHER EQUIPMENT**, as damage to the FX21 and/or the other equipment is very likely.

AUTO-DRAFTING OPTION

The auto-drafting feature allows the FX21 to be used with sheep crate / drafting system from Racewell Industries Ltd, when they are fitted with the *Iconix* Auto-Draft Controller. When auto-drafting is enabled in Set-Up, two additional drafting settings are available when **DRAFT LIMITS** is pressed.

DRAFTING GATE DIRECTION (access using **DRAFT LIMITS**)

H C L	High weights=left Centre weights=centre Low weights=right
H L C	
C H L	
C L H	
L H C	
L C H	Low weights=left Centre weights=centre High weights=right

Use the **WEIGH MODE** key to change the setting.

To accept the displayed setting and move to the next, press **DRAFT LIMITS**.

The High, Centre and Low weight animals may be drafted left, right or straight through, in the case of 3-way drafting. For 2-way drafting, set one of the draft limits to zero and select the direction for the High and Low weight animals (ignore the Centre weight direction).

AUTO WEIGH ON/OFF (access using **DRAFT LIMITS**)

Use **WEIGH MODE** to change the setting.

To accept the displayed setting, press **DRAFT LIMITS**.

To automate the weighing and recording of an animal whenever the HOLD switch on the Racewell crate is operated, select the '*AUTO*' weigh mode. A signal from the crate activates the weigh function, eliminating the need to press **WEIGH** on the FX21. This is particularly suited to the fast drafting of sheep.

Where it is desired to enter tag numbers and/or condition scores, manual operation of **WEIGH** should be selected. For manual operation, select '*AUTO.OF*'.

FAST WEIGHING (access using **WEIGH MODE** - see WEIGHING MODES)

MANUAL OVERRIDE OF AUTO-DRAFTING

When auto-drafting is in progress, it is possible to override the FX21-selected drafting direction, using the **0** key on the numeric keypad (remember **0** for **O**verride).

Press **0** to select the '*CEntrE*' direction.

Press **0** again to select the '*rIGHt*' direction.

Press **0** again to select the '*LEFt*' direction.

At any time during manual override, press any key other than **0** to exit manual override and return to the weighing mode.

3. USER SET-UP

NOTE: The FX21 system has been factory-configured to optimum settings for the majority of applications. **It is strongly recommended that these settings are left as is, unless there is a good reason for making a change.** Please contact your dealer, distributor or *Iconix* for advice if necessary.

NOTE: Ensure that the correct set of loadbars or platform is connected to the FX21 indicator before attempting to change any set-up parameters. There are three possible scale types that are automatically recognised when plugged in, as shown by the Scale 1,2,3 annunciators on the right of the display. All of the set-up parameters are independently set and stored for each scale type.

Most FX21 settings apply only to the currently connected scale e.g. standard loadbars on Scale 1. Changing these settings has no effect on the other two scales.

Some settings apply to all possible scales (1: standard loadbars, 2: vet or other scale base, 3: heavy-duty loadbars). Changing these settings on one scale, will change the other two scales.

For access to set-up, press **WEIGH** and keep it held down while switching the FX21 **ON**. As soon as '`5Et`' is displayed, release **WEIGH**, then press **ZERO**. The parameters are accessed in the following order:

1. AUTO-DRAFT

`drFt.OF`	Off (default)
`drFt.On`	for normal speed
`drFt.H5`	for high speed

The auto-drafting feature allows use of the FX21 with sheep drafting units from Racewell Industries Ltd. For new model Racewell crates (these have 4 infrared "eyes" fitted), select the high speed auto-draft mode. The high speed mode should NOT be used for older model Racewell crates.

When auto-drafting is enabled, additional drafting functions are available via the FX21 keyboard.

To change the Auto-Draft setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**

2. ZERO-TRACKING

`2Er0.On`	On (default)
`2Er0.OF`	Off

Zero-tracking automatically restores the scale to zero, by "tracking out" small amounts of dung and dirt left on the scale. It should be ON for most weighing applications.

To change the Zero-Tracking setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**.

3. DUPLICATE TAG NUMBER CHECKING

`dUPL.OF`	Off (default)
`dUPL.On`	On

When Duplicate Checking is enabled, after entering a tag number, when **WEIGH** is pressed all records in the selected Group are checked for previous use of the same (non-zero) tag number.

To change the Duplicate Checking setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**.

4. BAUD RATE

Select from the range 1200, 2400, 4800, 9600, 19200, 38400, 57600
   `b.19200` for example.

Baud rate is the rate of data transfer via the RS232 serial port. The FX21 is factory set to 19200 for high speed data transfer when uploading records to a computer with the *Iconix* WinFX Linker programme. It must be changed to 4800 for use with the *Iconix* FX Printer.

To change the Baud Rate setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**.

5. DISPLAY RELEASE

$rELS.OF$ Off (default)
$rELS.On$ On

The standard factory setting is Display Release OFF, which in HOLD mode keeps the last weighing locked on the display until the next weighing.

For Display Release ON, when the weighed animal is removed from the scale, the weight will not remain locked on the display.

To change the Display Release setting, press **ZERO**.

To save this setting and exit Set-Up, press **WEIGH**.

6. WEIGHT UNITS   (all scales)

HG kilograms (default)
Lb pounds

The standard factory setting is kg. If pounds are selected, the scale calibration is changed accordingly and printouts will show LB.

To change the Weight Units setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**.

7. LANGUAGE   (all scales)

$EnGLSH$ English (default)
$ESPAnL$ Spanish
$dEUtSH$ German
$FrAnCE$ French

The display messages and printouts are shown in the selected language. There are English, Spanish, German and French versions of the front panel decal. The language setting should match the decal.

To change the Languag setting, press **ZERO**.

To save this setting and step on to the next one, press **WEIGH**.

After the Language setting has been viewed or modified, **WEIGH** is pressed for the final time. '$SAUEd$' is displayed while the settings are being stored, before returning to the normal weighing mode.

4. SPECIFICATIONS

FX21 Version 5.01 onwards ($P\,5.01$ is shown at switch-on), 2007 onwards

Supply Voltage:
Nominal   ....   12V DC
Maximum   ....   19V DC
Reverse polarity protection diode fitted.

Low Battery Indication: Below approximately 11.5V the LOW BAT pointer ▲ will be on.
The FX21 switches off at approximately 10V.

Supply Current: Approximately 110 mA including loadbar set.

Temperature Range: -5ºC to +50ºC

Zero Tracking: Small residual weights left on the scale between weighings (dirt build up) are automatically 'zero-tracked' out and the scale restored to zero. As this occurs the ZERO pointer ▲ will indicate that ZERO has been reached.

The zero-tracking amount is set to 0.5% of the weight displayed after the last press of **WEIGH**, with a 2.2kg maximum.

At switch-on the zero-tracking amount is initialised to 0.015% of capacity (0.3kg for 2000kg loadbar set).

Resolution: Autoranges in graduated steps from the zero point of the scale.

Scale 1:				
Standard Loadbars	*Metric Model*	Resolution	*Imperial Model*	Resolution
	0 - 20 kg	0.1 kg	0 - 40 lb	0.2 lb
	20 - 50 kg	0.2 kg	40 - 100 lb	0.5 lb
	50 - 200 kg	0.5 kg	100 - 400 lb	1 lb
	200 - 500 kg	1 kg	400 - 1000 lb	2 lb
	500 - 2000 kg	2 kg	1000 - 4000 lb	5 lb

Minimum Capacity: 20kg (The 0-20kg range is available but is not part of the EMC specification).

Scale 2:				
Vet Scale	0 - 100 kg	0.05 kg	0 - 200 lb	0.1 lb
	100 - 300 kg	0.1 kg	200 - 600 lb	0.2 lb

Scale 3:				
Heavy-Duty Loadbars	0 - 100 kg	0.5 kg	0 - 200 lb	1 lb
	100 - 200 kg	1 kg	200 - 400 lb	2 lb
	200 - 1000 kg	2 kg	400 - 2000 lb	5 lb
	1000 - 3500 kg	5 kg	2000 - 7000 lb	10 lb

Accuracy: ± 0.5% of Displayed Reading ± 1 Division (where 1 division is 0.1kg, 0.5kg etc. depending on weight range)

RF Immunity: Maximum additional error in a 3V/m RF field in the range 27 - 500 MHz is:
± 2 divisions for 20 -   50kg
± 1 division for   50 -   200kg
± 0 division for 200 - 2000kg

EMC Approvals: Meets or exceeds the following standards:
IEC801-2   Electrostatic discharge
EM50081-1   Free radiation measurements
EM50082-1   RF immunity
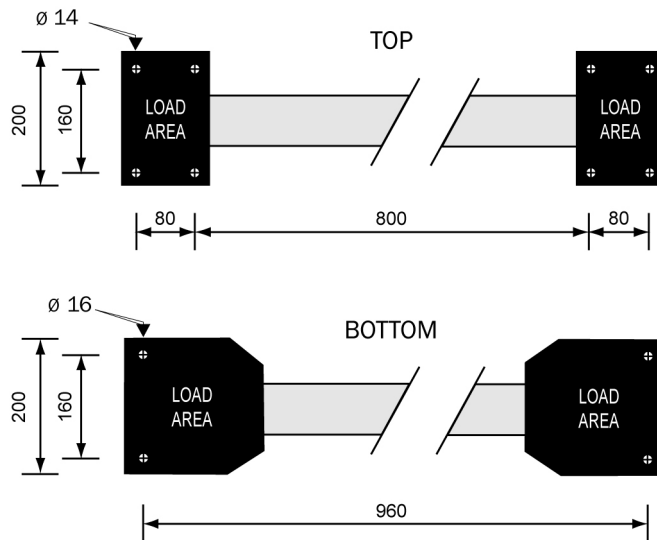
STEEL LOADBAR SET 2000kg
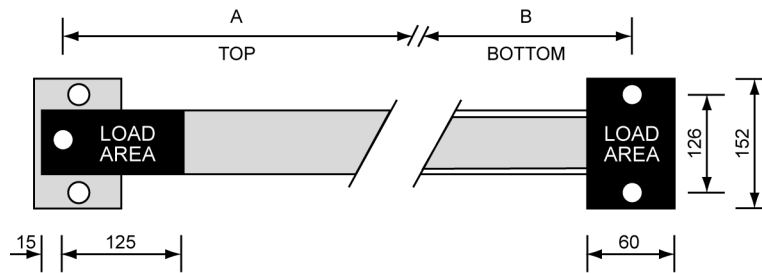
600mm

A:	570
B:	546
Length:	600
Width:	152
Height:	95
Capacity:	2000kg

1000mm

A:	970
B:	946
Length:	1000
Width:	152
Height:	95
Capacity:	2000kg

HEAVY DUTY LOADBAR SET 3500kg

Length:	1000	**Width:**	200	**Height:**	115
Capacity:	3500kg				