## **FT-30M**

### **On-board Weighing Indicator**

### Installation + Operation Manual







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### About this Manual

#### Copyright

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#### Disclaimer

In order to improve design, performance and reliability, we reserve the right to make changes to the products contained in this manual. The information in this manual is believed to be accurate in all respects at the time of publication, but is subject to change without notice. Flintec AB, its subsidiaries or its distributors assume no responsibility for any consequences resulting from the use of the information provided herein.

#### **Software Versions**

All Flintec instrumentation is subject to continuous improvement and updates. This manual covers FT-30M on-board weighing indicator software version V0.7.0.10002. If your instrument is a previous version and you require an upgrade to the most current software, please visit the Flintec web site where the latest software update can be downloaded. Uploading software updates is explained in this manual. Please note, some options may require additional hardware to function properly.

#### Safety

This manual is intended for use by service technicians and operators responsible for installing and setting-up the Flintec FT-30M on board weighing indicator. Failure to follow these instructions could result in damage to the indicator or injury.

#### **Symbol Definitions**

Indicates a potentially hazardous situation that, if not avoided could result in minor or moderate injury, and includes hazards that are exposed when guards are removed. Indicates information about procedures that, if not observed, could result in damage to equipment.

Indicates an important procedure that must be followed to ensure correct set-up and use.

#### **Safety Precautions**

Do not operate or work on this equipment unless you have read and understand the instructions and warnings in this manual. Health and safety is your responsibility. Do not use weighing indicator whilst driving.



### Introduction

#### **Product description**

FT-30M is an on-board digital indicator with a clear and easy to read LED touch screen display. It is designed for industrial road vehicles, trailers and agricultural machines. It is modular plug & play, easy to install and use. It provides users with precise weight information where and when it's needed. It has two input channels for separate groups of load cells. The RS485 and RS232 communications ports allows it to integrate with PLC systems and devices such as printers.

#### **Applications**

The FT-30M is designed to work with a range of Flintec products and other makes of load cells and sensors.

It fits neatly into spare radio slots, on the dash, or can be panel-mounted.

FT-30M is a simple to use on-board vehicle weighing indicator. Its easy-to-read full colour LCD touch screen gives operators the power to control payloads, maximise profits and avoid dangerous overloads. Simple on-screen menus mean drivers can choose between Net, Gross, Percent, Collected or Delivered weights.

It's packed with standard features such as on-screen customer identification, printing and storing weighing transactions as well as high security anti-tamper pin code protection and on-screen diagnostics. It's compatible with a range of accessory devices for maximum vehicle utilisation and payload efficiency. On screen calibration makes set-up simple.





#### **Key Features**

Two overload alarm set-points

On-screen customer identification

Record collected or delivered loads

Print bin weights with time & date

Two channel mV input

High resolution RGB touch screen

Six languages. Kg or Lbs

Anti-tamper pin code protection

On-screen troubleshoot diagnostics

Versatile mounting options

#### **Applications**

Mines & Quarries
Cranes & Skip truck
Articulated
Semi-trailer
Dump truck
Sweepers & Spreaders
Tippers & Bulk
Waste & Recycling
Forestry & Logging
Hook loader
Agricultural
Light commercial



### **Dimensions and Mounting Options**

#### **Versatile Mounting Options**

The indicator is sized to fit neatly into the spare radio DIN slot in vehicle cabs and be unobtrusive to the driver's field of vision. A RAM swivel-mount option allows the indicator to be positioned and adjusted to suit in-cab conditions and the position of the driver. A range of bracket accessories is available to adapt to any kind of installation. An IP68 enclosure option allows it to be fitted outside of the cab; e.g. on the side of the trailer.



### Installation

#### **Radio DIN Mount Assembly**

Industrial vehicles have spare radio slots for after market hardware devices. The FT-30M is sized to fit the DIN specification of a radio slot. A DIN radio kit comprises two ears, a zinc plated DIN cage, extraction keys and screws.

In the truck cab, locate a suitable spare DIN radio slot. Remove the existing cover plate. The DIN cage fits snugly into the opening right up to the lip of the DIN cage. Before you push it in, pull the wiring cables through the cage.

Once in place, use a small screwdriver or similar tool to pry down on the securing tabs around the perimeter of the cage so they grip the inside the opening. This will prevent the cage from slipping out or tilting from the weight of the FT-30M.

The DIN cage is symmetrical, either way, top and bottom, left and right. Some vehicles may already have an 'ISO Mounting', this means the DIN cage is not required, the FT-30M will fit snugly into the opening without the cage.

Connect the power and signal connectors to the back of the FT-30M.

Screw the DIN mounting ears to the FT-30M using the Torx screws provided.

Push the indicator in to the DIN cage until it snaps into position.

Remove the FT-30M using the two extraction tools, place the keys into the slots located in either ear and press downwards so they grip inside the ears, gently pull on the keys and the indicator pulls out.

#### **RAM-Swivel Mount**

Locate the most convenient place for mounting the indicator. When attaching the RAM mount ensure sufficient headroom, bear in mind there will be cables wired into the back of the indicator, make sure to allocate enough space for them. Device support manufacturers such as RAM, Tallon and others supply an extensive range of RAM-Mount and Tallon accessories.





пПи

иПп

RAM Mount for dashboard.  $^{1}/_{4}$  - 20 UNC Camera thread

### Installation

#### **IP68 Waterproof Enclosure Mount**

For externally mounted applications such as trailer-mounted or close to the loading area on the rear of the truck. The IP68 mount allows access to the functions of the indicator. The waterproof mount comprises an IP68 lockable enclosure with hinged clear lid and rear flanged mounts, a panel mount face plate and screws. Installers are required to fit cabling and drill cable entries to suit the application. Right angled connectors are required at the rear.





Stainless Steel Latch

Clear Polycarbonate Lid



#### Panel Mount

Where installers require fitting into a panel, four M3  $\times$  8 mm screws are required. The template below shows the panel mount profile.



### **Technical Specification**

The FT-30M on-board indicator for industrial vehicles and agricultural machines is designed to be easy to fit and simple to operate, giving the driver precise weight information where and when it is needed. It incorporates a clear and easy to read colour touch screen display. It has two analogue input channels, an RS485 and RS232 input and output and two alarm set- points providing power to external audio-visual alarm devices. It is housed in an ABS injection moulded housing.

#### Power

Voltage input 9V to 32V DC Consumption 100mA at 24V DC + external loads Max input current 4 Amps

#### **Display**

RGB touch screen. Format 480×169 dots

Operating temperature -20° C to +50° C Brightness adjustable, high, medium or low

#### **Analogue Inputs**

2 independent channels 24 bit sigma-delta ADCs Excitation 5V DC Input 8 load cells per channel 8× 350 Ohms. 115 mA per channel Max input signal: +/-19.0625mV Input resistance: 120-1000Ohms Sample Rate 10SPS Resolution (ENB) 18 bits (19.5 bits)

#### Alarm Outputs

Alarm 1 supply voltage, high side switch only

Alarm 2 supply voltage, high side switch only

#### RS485 Serial

Baud Rate fixed at 9600, n, 8,1 Connector M12 - 4 pin (to be added)

#### RS232 Serial

Baud Rate fixed at 9600, n, 8,1 Options: Printer or Format protocol Connector 9 way D connector

#### USB2

#### Enclosure

Housing material ABS Total weight: 400 gr

#### **Temperature Rating** -20° to +50° C

EMC classification UN ECE R10.06

Internal Data Storage 65 Mb

#### Languages

En, De, Fr, Es, It, Pt

United Nations Economic Commission for Europe (UNECE) Regulation 10 Electro Magnetic Compliance (EMC) mark and Flintec approval number.

Quick reference (QR) code

This allows the Flintec FT-30M service app to track software changes.



#### **Approvals & Regulations**

The FT-30M is type approved by the UK Vehicle Certification Agency to UNECE Reg 10. This is a UN regulation recognised by over 50 countries which covers the electromagnetic compatibility of electrical systems used on vehicles.

FT-30M has been extensively environmentally tested for shock loads and vibration under severe conditions at a registered testing laboratory.

### **Electrical Connections**

#### **Connections & Junction Boxes**



- 1. Input Channel ONE, Max +/-19.0625 millivolts
- 2. Input Channel TWO, Max +/-19.0625 millivolts
- 3. COM port 1 RS232 port for printers
- 4. Power Input 9-32 Volts DC & 2 Alarm power outputs
- 5. COM port 2 RS485 port for LDUs
- 6. Panel mount and radio DIN fixing screws M3
- 7. 1/4" 20 UNC camera mount to attach RAM-Mount 1" ball
- 8. DIN radio mount ear brackets two required

Reverse polarity and over-voltage protected. Input load cell and sensors should be in the 0-3.5mV/V range with typical impedance values of  $120\Omega$ - $1000\Omega$ . A variety of sensors comprising multiple pairs of load cells, extensometers, deflection sensors, air pressure sensors, encoders and fifth wheel load cells can be connected. The two channel input allows for applications comprising two separate bodied trucks or sensors with different inputs to be calibrated separately and independently (twin) or together (dual). The FT-30M MENU provides weighing data and user definable settings and SET-UP MODE, a password protected menu for service engineers and supervisors which includes alarm set points, calibrations and diagnostics.

#### M12 Electrical Connector

The modular M12 connector makes the electrical installation quick and easy. A range of versatile M12 accessories means that combinations of load cells and sensors to suit thousands of applications are easily connected. Power and signal connectors are key-wayed, gendered and thumb tightened. Junction boxes are internally wired in parallel for all analogue systems.



Male - Female Extension Cable

Junction Boxes

#### **Extender Cables**

Flintec DSB7 on-board weighing load cells have a 5 meter MALE M12 cable as standard. Extender cables for longer reach applications are available in 1, 3, 5, 7.5 and 10 metre lengths.

### **Electrical Connections**

#### Wiring Connections - Rear of FT-30M

#### SIGNAL channel 1 & 2, M12 Female

Pin 1	BROWN	+ Excitation	5 Volts DC
Pin 2	WHITE	+ Signal	millivolts from junction box & load cells
Pin 3	BLUE	- Excitation	0 Volts
Pin 4	BLACK	- Signal	millivolts from junction box & load cells

#### POWER & ALARM, M12 Male

Pin 1	BROWN	Vehicle volts	12V (LCV) or 24V (MCV & HGV)
Pin 2	WHITE	Output 1	12V or 24V
Pin 3	BLUE	Ground	Ground 0 Volts (common)
Pin 4 BLACK		Output 2	12V or 24V
SHIELD		Ground	Connect cable shield to vehicle ground

#### RS232 input and output, Male 9 pin Sub D

Pin 2	-	Rx	Receive
Pin 3	-	Tx	Transmit
Pin 5	-	GND	0 Volts Ground
Pin 9	-	Volts	12 Volts

#### RS485 input and output, M12 Female

Pin 1	-	Volts	12V 0.5A max
Pin 2	-	D-	Half Duplex -
Pin 3	-	GND	0 Volts Ground
Pin 4	-	D+	Half Duplex +



Load cell wiring configuration. 2, 3, 4, 6 and 8 load cell or sensor combinations.



### Load Cells and Sensors

#### Load Cells and Sensors

FT-30M is compatible with any load cell or sensor with a strain gauge output including the new DSB7 range of high accuracy, high capacity truck load cells 7.5t, 15t & 25t. Each IP68 load cell is fitted with a 5 meter fully sealed M12 cable connector. See www.flintec.com for more details.

#### **Accessories and Options**

To enhance weighing system utility for any application, FT-30M is compatible with a range of accessories and M12 cable-connector components. Contact Flintec for details.



### Accuracy and Performance

#### Accuracy and Performance

This manual is primarily concerned with the installation and use of the Flintec FT-30M on board weighing indicator. Accuracy and performance is dependent on the quality, type and installation quality of the load supporting load cells or sensors. The Flintec DSB7 range of vehicle weighing load cells are ideally suited. Please refer to the appropriate load cell installation manual for the load cells installed. Optimum on-board weighing performance is obtained when the load cells are installed between the load-carrying body (compactor body, tipper body, box, tank, flat-bed, etc.) and the vehicle chassis and carrying the entire weight of the superstructure and payload. No weight-supporting structure other than the load cells, such as braces or gussets should attach the superstructure to the chassis; this will result in an alternate load-path that will degrade weighing system accuracy. Typical applications include: waste trucks, tippers, tankers, flat-beds and van type structures mounted on either truck chassis or trailer frame.

Truck bodies and payloads are supported above the chassis with load cells mounted directly to the truck frame (see example illustrations below). This is usually accomplished by separating the suspension subframe from the body frame and installing load cells between these structures. Air and fluid pressure sensors, extensometers and other forms of secondary sensor can be alternatively fitted to vehicles. The FT-30M is compatible with any sensor with an output range up to 3.5 mV/V.

#### **Applications**

Installations are typically accomplished by separating the body frame from the chassis or trailer frame and installing load cells between these typical vehicle structures;



### First Installation Set-up

#### Power-on and First Set-up

Settings are entered on initial set-up or any time later. All settings can be changed. Turn ignition on, you will be asked to follow this setup procedure. Access to a weighbridge is required. Calibration is performed by entering tare (unladen) weights whilst stationary and on flat ground. Calibration is completed by loading the vehicle to its legal maximum and weighing the vehicle to obtain the gross weight. If the FT-30M has been stored for an extended period, or if any problems are experienced with the clock functions, then it is advisable to leave the unit powered up for 6 hours or more before setting the time and date.





0k

#### Press 0kc 0k



### Ch1 Ch1 mV/V =

0.14228 Tare  $\langle \rangle$ Ť

Tare (unladen)

12,580ka

Ch1

Δ

Press: 12. Tare mV/V Confirm the Tare mV/V.

11. Tare Weight

Input the Tare weight. (12, 580kg)



**13. Gross** Weigh the fully laden vehicle. (Gross weight)

to enter the Tare weight.



Input the Net weight. (26,000kg)

14. Gross Weight

15. Gross mV/V

Confirm the Gross mV/V.



Ch1		0	4,				
		1	5,				$\frown$
Gross		2	6,	0	0	0	$(\checkmark)$
$\bigcirc$	1	3	7,	1	1	1	Ċ
$\langle \rangle$	2	4	8,	2	2	2	kg
				L			
			1				

Ch1 Ch1 mV/V = Gross 0.51711  $\langle \rangle$ Ť







16. Calibration Done The green tick confirms calibration.



Press:

Press:

17. Set Up Complete Single Channel calibration is complete.



### **18. Home**

Home screen displays Gross weight by default.



Press: (C) to toggle the Net Payload to be displayed.

empty എറ്രപ് -0 Weighbridge: 12,580kg

\*mV/V is the signal level from the load cells and must be stable. Flickering indicates a problem with a load cell, connection or the load is moving.



\*mV/V is the signal level from the load cells and must be stable. Flickering indicates a problem with a load cell, connection or the load is moving. Values are different from

\*Tare + Net = Gross. (12,580 + 13,420kg = 26,000kg).

the Tare mV/V.

The gross weight is what's displayed on the home screen by default.

Onboard Weighing | FT-30M | www.flintec.com

### **On-screen Keyboard function**

An on-screen keyboard is available to allow editing of certain text fields. This function is activated in a similar way when the operator clicks on an editable field with text entry, such as for Labels or the Truck ID. Other menus using this include RS232 setup and data streaming. The following sequence is shown as a representative example:



### **Truck Modes**

#### **Changing Modes**

The truck mode can be changed in the menu by following the steps below. A choice between Single Channel, Dual Channel, Twin Channel, Pick-Up or Delivery is available. Choose the mode best suited for your application. More detailed calibration and set-up guides for each mode appear later in this manual.



### Graphic User Interface - Menu Map

#### Intuitive Touch Screen Operation Software

For quick and easy navigation, a finger press or swipe gesture guides users through the graphic functions. Driver MENU settings allow frequently used adjustments to be made. Critical MENU settings are pin code protected.



### **User Functions**

#### **User Functions and Settings**

The FT-30M is configured & calibrated for the application. Not all functions are available, some require additional devices. Faded button = function not available or out of range. Strike-through = not activated.

• • •	MENU	To access user functions. Will revert to HOME after 45 seconds of no activity.
A	HOME	To go back to HOME screen.
â	GROSS	Total vehicle weight. Press to view another weighing mode.
Â	NET	NET is the weight of materials loaded on the vehicle. Press for Gross.
8	PERCENTAGE	Is the PERCENTAGE of GROSS weight. Press to view another weighing mode.
>0< >0< >0<	ZERO	Press to display ZERO. Max range +/-300kg from calibrated zero weight.
🔁 🖶	PRINT	Print displayed weight. Press to PRINT.
<sup>4</sup> 30, <i>3</i>	MOTION DETECT	Display shows '' after 30 seconds of motion. Touch screen to display HOME.
	ENTER	To accept a value.
$\overline{\mathbf{O}}$	EXPLORE	For next page or back a step.
🗊 🕐 👘	ALARM SET-OFF	AMBER ALARM has been triggered. Press to mute.
	ALARM MUTED	AMBER / RED ALARM has been triggered AND muted.
	ALARM SET-OFF	RED ALARM has been triggered. Press to mute.
	COPY TO USB STICK	Copy user data to USB stick.
* * *	BRIGHTNESS	Toggle between Low, Medium and High.
14 10 15 11		To adjust the time or select a value or customer
10         12           17         13           18         14	IWHEEL	Finger swipe to select setting. To accept press:
000	TIME	Press to adjust the time with the adjustment iWHEEL.
	INFORMATION	Press to view: Date & time. Serial no. Software version. Calibration time & date.Tare and Gross. Alarm status & settings.
	BLEEP VOLUME	Toggle between off, Low, Medium and High.
$\mathbf{\Sigma}$	SETTINGS	To access passcoded settings menu.
<b>P</b>	ON-SITE DELIVER	Print & record delivered loads. Arrive on site, press & select or enter a
A.,	OFF-SITE DELIVER	Press when leaving site.
A	ON-SITE PICK-UP	Print & record collected loads. Arrive on site, press & select or enter a
A	OFF-SITE PICK-UP	Press when leaving site.
<u>a</u>	LOAD COLLECT	Press to record individual container or part loads from or to customer sites. LOAD and SITE weights are added to NET.
	WARNING BAR	Amber means WARNING, the vehicle is close to its maximum legal payload. Red means OVERLOAD, maximum legal payload is reached. Unload the vehicle. When gross weight reaches 80% of the weight warning alarm setting, the warning bar shows and increments in steps of 2% until it reaches 100%.

### Set-up Functions

WEIGH SETTINGS	Access Modes, Kg, Lbs, Gross, Net, %, Count-by.
CALIBRATION	Calibration settings.
ALARM & PRINT	Press for Alarm and Print settings.
OPTIONS	Press for: Language, adjust time, diagnostics, reset, change password, update software, change print ticket, get data files.
TRUCK MODES	Press for truck modes. E.g. Single, Dual or Twin channel or Pick up or Delivery.
KILOS OR LBS	Toggle for Kilograms or Pounds.
WEIGHT MODES	Weighing modes are Gross, Net, Percent.
COUNT-BY	Count-by: 1, 10, 20, 50, 100, 200.
GROSS WEIGHT	Total vehicle weight. Press activate/deactivate.
NET WEIGHT	NET is the weight of materials loaded on the vehicle. Press activate/deactivate.
PERCENTAGE	Is the PERCENTAGE of GROSS weight. Press activate/deactivate.
CALIBRATE CH1	Press to enter Channel 1 calibration settings.
CALIBRATE CH2	Press to enter Channel 2 calibration settings.
ZERO	Press to remove zero offset.
AMBER ALARM	AMBER ALARM is ON, Press to access setting. ALARM is OFF.
ALARM TEST	Amber alarm test. OP1 will be set (on power and alarm).
RED ALARM	RED ALARM is ON, Press to access setting. RED ALARM is OFF.
PRINT SETTINGS	Press to turn printer On or Off.
LANGUAGE	Press to access language settings.
TIME	Press to access Time Zone, Date, Time and Date Format.
TIME ZONE	Press to to access Time Zone.
SET DATE	Set the current day, month and year.
DATE FORMAT	Choose from: DD-MM-YYY, MM-DD-YYY or YYYY-MM-DD.
DIAGNOSTICS	Displays analogue to digital counts.
RESET SETTINGS	Resets to factory or to new install settings - exercise caution - should be done by competent person.
PASSCODE RESET	To change passcode.
USB SETTINGS	To access USB functions.
UPDATE SOFTWARE	Update FT-30M software from a memory stick.
UPDATE PRINT TICKETS	Upload print ticket styles.
UPDATE CUSTOMER LIST	Upload customer lists to the FT-30M.
DOWNLOAD WEIGHTS	Download weighing transactions to the USB memory stick.

### Set-up Functions (continued)

1

Labels	LABELS	Select and edit user / customer labels.
ID	ID	Enter truck ID
<u>_</u>	CALIBRATION W WEIGHBRIDGE	Calibration sequence based on weighbridge readings
/	4-POINT CALIBRATION	Linearisation function with 4 loading points across the weighing range.
mV/V	MV/V CALIBRATION	Electronic calibration based on mV/V readings.
Adjust	GROSS WEIGHT ADJUST	Allows to make minor adjustments to GROSS vehicle weight.
<u></u>	SET FILTER	Select averaging filters.
Com1 RS232	RS232 COMMS	Select and adjust RS232 parameters.
Com2 RS485	RS485 COMMS	Select and adjust RS485 parameters.
>IZ<	INITIAL ZERO RANGE	Select the amount of zero range on power-up.
×0<	ZERO BUTTON RANGE	Select the amount of zero range on pressing zero button.
ZT ↔	ZERO TRACK RANGE	Select the amount of zero tracking range.
	SAVE SETTINGS	Save settings to USB stick.
<b>.</b>	RESTORE SETTINGS	Restore settings from USB stick.

### **Calibration - Important Note**

Before calibration, ensure that there are no `3/4 Point Calibrations' active from a previous calibration. To access 3/4 point caliration use the following sequence:



### **Calibration - Single Channel**

#### Calibration

If calibration was not completed in the initial set-up, or needs subsequent adjustment follow these steps. Access to a weighbridge is required. Calibration is performed whilst stationary and on flat ground by entering tare (unladen) weights. Calibration is completed by loading the vehicle to its legal maximum and weighing the vehicle to obtain the Net Payload.



### **Calibration - Single Channel**



#### Calibration

Dual mode allows two input channels to be calibrated separately and independently. The displayed weight is the summed total of Channel 1 and Channel 2 (Ch1+Ch2). Dual allows load cell and sensor types with different outputs to be installed to the same vehicle.

On flat and level ground weigh and enter Tare (unladen) weights for channel 1 & 2. Load the vehicle to its legal maximum. Weigh and enter the vehicle Net Payload for channel 1 & 2. Example shown is an articulated truck with 5th wheel load cells fitted to the tractor unit & wired to channel 1 (Ch1). Air pressure sensors are fitted to the trailer & wired to channel 2 (Ch2).





Ch2 Chan2 mV/V = $0.3007$	<b>18. Trailer Tare mV/V</b> Confirm the trailer Tare mV/V. Press:	*mV/V is the signal level from the load cells and must be stable. Flickering indicates a problem with a load cell, connection or the load is moving.
Ch2 Ch2 S,840kg Ch2 Gross Okg Load Vehicle.	<b>19. Channel 2 - Trailer Tare Ca</b> Return to calibrate Channel 1 Gross. Press: twice to return to Weight	<b>alibration Done</b> Settings Menu.
Cal Ch1 Cal Ch2 Zero Options Set Filter	<b>20. Channel 1 Calibration - Tr</b> Complete Channel 1 calibration. Press:	actor Gross
Ch1 Tare (unladen) Gross Gross 10,580kg 26,740kg	<b>21. Tractor Gross</b> Weigh and record fully laden tractor Gro Press: *Tippers raise body to weig	bss weight. Weighbridge: 26,740kg GROSS
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	<b>22. Tractor Gross Weight</b> Swipe up or down to input the tractor G Press:	Bross weight. (26,740kg)
Ch1 $Ch1 mV/V =$ Gross 0.45456	<b>23. Tractor Gross mV/V</b> Confirm the tractor Gross mV/V. Press:	*mV/V is the signal level from the load cells and must be stable. Flickering indicates a problem with a load cell, connection or the load is moving. Values are different from the Tare mV/V.
Ch1 Tare (unladen) Gross Ch1 Tare (unladen) Gross 10,580kg 26,740kg	<b>24. Channel 1 - Tractor Gross</b> The green tick confirms calibration for C Press: twice to return to Weight S	Calibration Done Channel 1 is complete. Settings Menu.
Cal Ch1 Cal Ch2 Zero Options Set Filter	<b>25. Channel 2 Calibration - Tr</b> Complete Channel 2 calibration. Press:	ailer Gross
Ch2 Tare (unladen) Gross Ch2 5,840kg Okg	<b>26. Trailer Gross</b> Weigh and record fully laden trailer Gros	ss weight.



#### Calibration

Twin mode allows two input channels to be calibrated separately and independently. The displayed weights are two weights to show the rigid truck body (Channel 1) and the trailer weight (Channel 2).

On flat and level ground weigh and enter Tare (unladen) weights for channel 1 & 2. Load the vehicle to its legal maximum. Weigh and enter the vehicle Net Payload for channel 1 & 2. Example shown is a rigid wagon and drag truck.









### FT-30M 3 or 4 point linearisation calibration

The 3 or 4 point calibration provides a straight-forward method to improve scale performance using the touchscreen.

It improves accuracy from no-load to full-load where the installed sensor or load cell outputs display a non-linear characteristic. It is available in all modes except Totalising.

An accurate weighbridge or known weights are required. Point 1 Tare and Point 4 Gross must always be included, Points 2 and 3 can be enabled or disabled and calibrated where required.

Reverse calibration can be performed where the user starts with a full load and does Point 4 Gross first.

On-screen red text means an error has occurred, check the entered figures and repeat the steps below.

The example graphs show the effect of deploying this feature on a scale with "S" shaped non-linearity:



### FT-30M 3 or 4 point linearisation calibration

Ch1 Ch1 mV/V = Tare 0.24620	Set Point 1 Tare Weight. If no mV/V value is shown, check the connections.
Point 1 Tare: 6,200kg (0.24649mV/V) >>> Point 2: Off >>> Point 3: Off >>> Point 4 Gross: 24,000kg (0.85726mV/V) >>>	Activate Point 2 Press <b>Point 2:</b>
Ch1 Point 2	Activate Point 2 press
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Set Point 2 Place a 1/3 max. known weight on the truck, or load approx. 1/3 weight and weigh on a weighbridge. Enter the total (tare + 1/3) weight.
Ch1 $Ch1 mV/V = 0.44120$	Set Point 2 Weight
Point 1 Tare: 6,200kg (0.24620mV/V) >>> Point 2: 12,500kg (0.44120mV/V) >> Circle 3: Off >> Point 4 Gross: 0kg (0.00000mV/V) >>> ©	Activate Point 3 Press <b>Point 3</b> :
Ch1 Point 3 Disable Calibrate	Activate Point 3 press
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Set Point 3 Place a 2/3 max. known weight on the truck, or load approx. 2/3 weight and weigh on a weighbridge. Enter the total (tare + 2/3) weight.

### FT-30M 3 or 4 point linearisation calibration





Point 1 Tare: 6,200kg (0.24620mV/V) >>> Point 2: 12,500kg (0.44120mV/V) >>> Point 3: 18,100kg (0.65620mV/V) >>> Point 4 Gross: 0kg (0.00000mV/V) >>>

Set Point 4 Gross Maximum weight

Press Point 4 Gross:

Ch1		0					
		1					$\frown$
Point 3		2	4,	0	0	0	$(\checkmark)$
	1	3	5,	1	1	1	$\smile$
$\langle \rangle$	2	4	6,	2	2	2	kg

#### Set Point 4 Gross

Place a maximum weight known weight on the truck, or load approx. 100% weight and weigh on a weighbridge. Enter the total gross weight.

Swipe up or down to set the **Point gross** weight







Point 1 Tare: 6,200kg (0.24620mV/V) >>>
Point 2: 12,500kg (0.44120mV/V) >>>
Point 3: 18,100kg (0.65620mV/V) >>>
Point 4 Gross: 24,000kg (0.84320mV/V) >>>
0



To view calibraion settings from the driver-side menu:



# FT-30M - mV/V Calibration and Gross Weight Adjust



mV/V Calibration, calibrate without weights using the touchscreen

Gross Weight Adjust, adjust gross weight for small discrepancies

#### mV/V calibration (eCal) - without weights

A calibration made by entering mV/V values is a convenient method of calibrating an onboard scale. It is typically used where weighbridge truck scales or known dead weights are not immediately available. It allows users and OEMs to receive a pre-calibrated weighing system or indicator. The mV/V values are read from the load cell nameplate or calibration certificate and a calculation made based on the number of cells fitted. Tare mV/V is caused by the dead weight of the load carrying body resting on the load cells. Small misalignments can affect the precision of the mV/V signals. Should a discrepancy with a weighbridge scale become known, an in-service calibration adjustment can be made with the Gross Weight Adjust feature (described below). Alternatively, recalculate mV/V values and re-enter them in the mV/V calibration page or perform a weighbridge calibration.

The Tare weight is often printed on a Weight Plate inside a truck door or door pillar. If this weight is not correct then it is preferable for Tare calibration to be made using the standard weighbridge calibration page. For details see the FT-30M manual on the Flintec website. If the Tare weight is not known, set the display to read Net weight only until the empty vehicle can be accurately weighed on a weighbridge and the weight edited in the calibration pages.

Example mV/V calibration: A Tare mV/V signal is caused by the weight of the empty truck body resting on the load cells. With the truck body completely empty, read the Tare mV/V value in the diagnostic page.



Current mV/V is 0.2083, use this value in the Tare mV/V calibration page. Net weight is the Maximum permitted Net payload. Tare = **0.2083mV/V** 

#### Calculate Net Payload mV/V values using four DSB7-15t cells

The mV/V signal from the DSB7-15t cell at 15 tonnes is 2mV/V. The four identical cells are connected into a parallel summing junction box. The Net Payload mV/V calculation is:



Net payload = maximum gross weight - tare weight

E.g. 24,000kg - 6200kg (tare weight) = 17,800kg

The mV/V signal read from the load cells supporting the empty body frame is 0.2083mV/V, the weight of the empty body approximately 3250kg. This is added to the Net Payload value.

Use this value in the Gross weight mV/V calibration page.

0.5933 + 0.2083

Gross = 0.8016 mV/V
# FT-30M - mV/V Calibration and Gross Weight Adjust

Use this sequence to enter the mV/V calibration menu:



Done



# FT-30M - mV/V Calibration and Gross Weight Adjust

To view calibration settings from the driver home page menu:



Press to toggle through net, gross and %.

## **Gross Weight Adjust**

In the weeks and months following a mV/V calibration, small discrepancies in the weight readings might be observed between a weighbridge and the displayed gross weight. The Gross Weight Adjust feature allows the calibration to be fine tuned. Several readings should be taken and an average error of these weights used to adjust the calibration gross weight. Example:

The truck runs over a weighbridge and the difference in gross weight is noted. Use the average (mean) difference kg (or lbs) to finetune the gross calibration, in this case it weighs heavy:



Check the home page weight to make sure the correct weight is displayed.

# FT-30M Zero Options

Sometimes a scale may display a small amount of weight where there is no load present. This is referred to as drift or zero offset and can be down to several reasons such as dirt build-up, steel creep or temperature. Zero Options helps to provide the user with a better understanding of the actual weight being transported. The settable zero options described in this document are adjustment values, and do not affect the calibration set-points. If zero values remain high, a fresh calibration is recommended.



FT-30M onboard weighing indicator





## Cancel Zero

Cancels any previous zero off-set arising from Initial Zero (IZ), the user pressing the Zero button (>0<) or Zero Tracking (ZT). Cancels offset arising from Zero drift - e.g. the amount of zero accumulated by pressing the driver zero button.

Cancel Zero Cancelled Cancel Zero



The cancel zero button will momentarily flash 'cancelled'.



## Initial Zero Range

Weight can drift from zero on power up. This feature will cancel any stray weight within a settable range when the FT-30M is powered on. Initial Zero is Off when 0kg or 0lb is selected. The max. range is 500.

Initial Zero Range



slide numbers to required value





**Zero Button Range.** Minimum value = 10kg, max. value is 999kg. This is the maximum accumulated weight which can be zeroed by repeated use of the Zero function

It reduces the risk of user scale manipulation.

Zero Button Range



slide numbers to required value



# FT-30M Zero Options



#### Zero Track Range

Zero Tracking is a feature for saving the driver from pressing zero after fully emptying a load. It works by

maintaining a zero indication when the measured weight is within a certain range, close to zero. When the feature is activated, and the measured weight is within the desired range, the displayed weight can be seen counting towards zero, updating every second. The max. range is 200kg.



slide numbers to required value



**Done.** Programmed Zero settings will be shown under each selection button





to return to home screen.

# FT-30M onboard weight indicator filter set-up

FT-30M will respond to vibrations and dynamic forces when the vehicle, machine or load is in-motion by showing fluctuating weights (often referred to as noise). There is a trade-off between filtering the fluctuating weights and the step-response time of the system. The step-response is defined as the time between placing a weight on the scale and the correct stable weight reading being displayed. It simply defines the amount of time that is required to determine a final weight reading. In single channel mode there are 10 samples per second (SPS). In Dual or Twin mode (two channel mode) there are 4SPS per channel. Filtering is performed by averaging over these samples.

There are occasions where it's useful to take weight readings whilst the vehicle, machine or load is moving or settling-down such as live remote weighing or a crane weighing scale. FT-30M has digital averaging filters which slows down the step-response making weight readings more stable. It does this by averaging a number of consecutive readings when calculating the displayed weight. This is used to dampen unwanted weight fluctuations caused by vibrations or dynamic forces (noise). High settings will stabilise the display at the expense of rapid response to sudden weight changes. The options are FL0 to FL7.

The Filter setting FL define the number of samples over which the average weight is taken. Increasing the averaging samples will result in a more stable reading but will extend the time it takes FT-30M to settle to a final reading. The additional delay time can be calculated by dividing the number of samples by 10 (single channel) or 4 (dual/twin channels).

Where faster high-speed sampling rates are required Flintec offers a load cell digitising unit (LDU) EM100. This provides sampling rates of upto 1200 samples per second.



# FT-30M Passcode Guide

To access critical settings, a six number passcode is required. The factory default passcode is '000000'.

For the fixed master passcode, contact your local Flintec sales office.

## To change the passcode:



## **Revolving Passcode**

Revolving passcode generates a new passcode every hour, every day and every year. This helps prevent users guessing the passcode and making unnecessary changes to the calibration or settings.

To activate, toggle:



The calculation to work-out the next passcode is given in this example:

If the FT-30M password is set to 123456 (factory default is 000000).

The second digit is reset to zero to become a base number: 103456.

Read the hour (0 to 23), day (1 to 31) and year currently set in the information page



1. Information >	
2. Chan1 >	
3. Chan2 >	
4. Alarms >	
$\bigotimes$	17:50 16/02/2019

e.g. 17:50pm on the 16th of the month in 2019.

Formula = (hour x month day) + year + 103456

Therefore:  $(17 \times 16) + 2019 + 103456 = 105747$  this is the new one-time use passcode.

Repeat for a new passcode - it will change within the hour.

If the unit is changed back from revolving passcodes to a fixed one the user will be prompted to select a new passcode.

<u>Tip:</u> For a basic revolving passcode set the Passcode to "000000" with Revolving Passcode enabled. This allows a simple Passcode of = (hour x day) + year.

# **Reading FT-30M Settings**

## **Driver information pages**

Weighing system settings are displayed in the driver information pages. Changes can not be done in these pages.



Home Screen

Home screen will display after 40 seconds of no presses

## Select the information required by pressing the text line



1. Serial No: A0002560 2. Version: V0.7.0.10002 (100\_General) 3. OS (Mar 26 2020) 4. Truck ID:

FT-30M details page

Details displayed:

- 1. Indicator serial number
- 2. Software version
- 3. Operating System release date (Windows CE)
- 4. Truck ID

## Select Channel 1 calibration settings (Channel 2 follows the same format)



6. Filter: FL3 (Ave 8)

Channel 1 calibration settings page 2

5. Last calibration date & time
 6. Filter settings

Select Alarms calibration settings



Alarms settings page

Alarms settings page

# Guide to using the FT-30M USB port

## Upload FT-30M software updates

1. Software updates can be emailed or downloaded from a secure on-line folder.

2. Using a PC or Laptop, create a new folder on a USB 2.0 memory stick and name it FT-30M. The FT-30M looks for this folder.

3. Place the software files into this folder.

4. If the file extensions are not already .exe rename them from .ex\_ to .exe. Files with .exe can get rejected on computer servers when attached to emails etc.

FT\_30M\_Indicator.exe

FT\_30M\_Indicator\_Updater.exe

5. Power up the panel and wait for it to boot up,

6. Plug the USB stick into FT-30M front panel USB socket.



Integral 16GB Hi-Speed USB 2.0 flash drive





8. New software will be copied from the USB stick to the FT-30M. The FT-30M will restart and run the updated software. Check the Software Version in the driver info page.



## Copy monthly weight data to the USB 2.0 memory stick

FT-30M will store a rolling one month of weight data for every print, load or remote button press. This can be downloaded even if no printer is connected:

1. Plug the USB 2.0 stick into FT-30M front panel USB socket.



# FT-30M logo (splash screen) on start-up

A brand logo or custom image can be displayed instead of the Flintec logo for a few seconds whilst the FT-30M weighing application boots-up.

Suitable graphic editing software such as Adobe Illustrator (Ai) or Adobe Photoshop (Ps) is required to configure the image logo to the following parameters:

- 72 dpi (dots per inch)
- 480px X 170px (pixels)
- Set Image>Mode to RGB (Red Green Blue) and 8 bits/channel
- In the CHANNELS tab check each colour has 8 bits/channel (32 in total R/G/B/ RGB)
- Change background to Layer 0
- Save As a png file (portable network graphics)
- Save As Interlaced, Interlaced1 or Adam 7 when prompted
- Save As file name: FT\_30M\_Logo.png. Don't Save As a copy

## Upload to the FT-30M indicator:

- Create a new folder on a USB 2.0 memory stick and name it FT-30M. The FT-30M looks for this folder and its contents
- 2. Save As or drag & drop the PNG image file into this folder
- 3. Plug the USB stick into the FT-30M front panel USB socket
- 4. Navigate to the Logo update button







Integral 16GB Hi-Speed, USB 2.0 Flash drive



The new logo can be switched off in the USB Menu: press the green tick to a red cross. When the new logo appears, pressing the display (anywhere) twice will allow the default Flintec logo to appear.

#### Failure to upload logo:

A number of checks are made on the png file to ensure it is of the correct format. An errorcode will be returned if the FT-30M identifies the png is not of the correct format:

- SIGNATURE\_FAIL not a valid .png file
- IHDR\_FAIL not a valid .png file
- WIDTH\_FAIL logo width not 480px
- HEIGHT\_FAIL logo height not 170px
- BIT\_DEPTH\_FAIL Bit Depth (8) or Color Type (6) or
- Interlace (1) values incorrect (see above parameters)

# FT-30M Fixed and Custom data streaming

# for telemetry & GPS modems

This guide helps users to connect and test the FT-30M onboard weighing indicator to telemetry devices through the RS232 port. FT-30M features a clear & easy-to-read full-colour LCD touchscreen. For easy navigation, finger gestures guide users through graphic functions. Critical calibration MENU settings are passcode protected.

FT-30M is compatible with a range of load cells, sensors & accessory devices for maximum vehicle safety & efficiency. On-screen calibration allows straightforward set-up. It has two input channels for separate groups of load cells, power for alarm devices, RS485 & RS232 ports for printers, external remote displays & telemetry devices. It fits neatly into spare radio slots, can be panel-mounted or placed on the dashboard with a swivel-mount bracket. The operation manual can be found at:



Telemetry/GPS modems



## RS232 9-pin D pin configuration for PCs, telematic/modem devices

Pin 2 TxA_1	Output Serial port (transmit data) for direct connection to the host device - printer or telemetry device
Pin 3 RxA_1	Input Serial port (receive data) for direct connection to the host device - printer or telemetry device
Pin 4 CTS	Clear to Send input (Check for busy handshake for printers)
Pin 5 GND	Ground 0 V
Pin 9 12V	Optional battery volt source (12-24V) for printers

## To test the connection with a Windows PC/Laptop.

A free PC Terminal program is Tera Term which can be downloaded from: https://osdn.net/projects/ttssh2/releases/

For a PC/Laptop without a serial port, a USB-RS232 adaptor or adaptor lead can be used.

Be aware that Pin 9 from the FT-30M maybe carrying 12-24v, make sure the RS232 Power is off.

A 9 pin Female to 9 pin Female (Null-Modem) cable is needed with the following connections:



9 Pin Female to Female Null Modem test cable







FT-30M connected to a laptop

# **RS232 Configuration and Data Streaming Setup** of the FT30-M



when done.

activated, label data sent.



# RS232 Configuration and Data Streaming Setup of the FT30-M

## Custom data stream set-up

RS232 5. Stream Data (Off)	RS232	Press 5. Stream Data (off)
$\bigcirc$	Settings 1-5	
Stream Menu1. Stream (secs) = 102. Fixed Format (Off)	Stream Menu	Press 🗙 to enable. Press 📝 to disable, leave on when in use
3. Customise Format (On)	Settings 1-3	1. Press Stream (sec)
secs = $\begin{bmatrix} 0 & 0 \\ 0 & 1 & 0 \\ 1 & 2 & 1 \\ 2 & 3 & 2 \end{bmatrix}$	Stream (secs)	Time between each poled stream of data in seconds 1-999 Scroll to required pole-rate. Press 💉
Stream Menu 2. Fixed Format (Off)	Stream menu	Press 3. Customise Format (On)
3. Customise Format (On)	Settings 1-3	
Custom Stream1. Customise Stream Format2. Save to File (On) <>	Custom Stream	Press 🔀 to enable. Press 💟 to disable, leave on when in use Press 1. Customise Stream Format to access Formatter
$\bigotimes$	Settings 1-2	Save to file will store every poled weight in the internal memory Press 2. Save to File < > to toggle on or off

## Tera Term

- 1. Set the Tera Term connection to serial and select the connected port.
- 2. Set Terminal setup New-line to LF (Line Feed) also set FT-30M LF on Receive and Transmit.
- 3. The data being received is shown in the terminal program TeraTerm.

© TCP <b>/I</b> P	Host: myhost.example.com I History Service: Telnet SSH SSH version: SSH2 Other IP version: AUTO	Terminal s 269 Term si Auto wi Terminal ID	size x 56 ize = win size indow resize C VT100 •	New-line Receive: LF Transmit: LF Local echo	O Car He TEKJ
Serial	Port: COM5: USB-SERIAL CH340 (COM5)	Coding (re UTF-8	rceive) ▼	Coding (transmit) UTF-8 🔻	

# RS232 Configuration and Data Streaming Setup of the FT30-M

## Examples of streamed data-set for every second

Comma separated value (CSV) is Off so there is no comma delimiter, time and date format is editable, see manual. Each data packet can be On or Off, here they are on, this is a screen print:

🚾 COM5 - Tera Term VT			_			~
File Edit Setup Contro	I Window He	elp				
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
21-12-2021	05:37	YY71	8DE	14869	8369	
Date	Time	Truck	D =	Gross	Net	
Format is editable		truck reg	g. no.	total	material	

Example A: Fixed data stream

Example B: Custom data stream

	COM8 - Tera Term VT		-	
Fi	le Edit Setup Control Wir	ndow Help		
\$	\$1653712041;	24820;2	9820;	0;0;
\$	\$1653712043;	24820;2	9820;	0;0;
\$	\$1653712044;	24820;2	9820;	0;0;
\$	\$1653712046;	24820;2	9820;	0;0;
\$	\$1653712046;	24820;2	9820;	0;0;
\$	\$1653712047;	24820;2	9820;	0;0;
\$	\$1653712047;	24820;2	9820;	0;0;
	UTS	Net	Gross	Place holders
Header	<ul> <li>unique time stamp</li> <li>Delimiter</li> </ul>	r truck body	total truck, tare + Net	

## Save to File

As well as streaming over the RS232 port, the weight data string can be saved in the FT-30M. The data can then be later downloaded onto a USB stick: Make sure Save to File is On: **2.** Save to File (On) <> To download stored weigh data:-

1. Plug the USB stick in to the FT-30M front panel.



# **RS232 Configuration and Data Streaming Setup**

# of the FT30-M

## The Custom Formatter entry field

This field is where the formatter is entered, it can be entered in 3 ways;

- 1. On-screen keyboard; (not all special characters are available)
- 2. USB keyboard
- 3. Text file
- 1. Press to access on-screen keypad
- 2. Plug in a USB keyboard, tap format

field to bring up cursor, start typing

3. On a PC/Laptop create the text file:

FT\_30M\_Stream\_Format.txt.

Type the formatter in the very first line on the

document page (this is the only line read).

Save to a folder called 'FT-30M' on the USB stick.



[NT]	Net	[LW]	Pickup/Drop off Load WtNNT]	[TM]	Time
[GR]	Gross	[ID]	Truck ID	[LF]	Line Feed (NewLine) = '\n'
[1N]	Channel 1 Net Twin Mode	[TMT]	Telematics Type	[CR]	Carriage Return = '\r'
[2N]	Channel 2 Net Twin Mode	[A1]	Alarm1 Tripped 0/1	[DD] [	MM] [YY]
[1G]	Channel 1 Gross Twin Mode	[A2]	Alarm2 Tripped 0/1	[HH] [	[MN] [SS]
[2G]	Channel 2 Gross Twin Mode	[UT]	Unix Time Stamp		
[CS]	Customer (Pickup/Drop off)	[DT]	Date as per user setting		

A weight field such as [NT] or [2G] can be further modifield by stating its field width and justification:

Example 1: If the current net weight = 3645kg (quotes not transmitted)

[NT] will transmit "3645" [NT:8] will transmit " 3645" (fieldwidth = 8 and right justified) [NT:-8] will transmit "3645 " (fieldwidth = 8 and left justified)

#### Example 2:

A Telemetry system requires a header of "\$\$" with Gross & Net semi-colon seperated and CR Terminated. If the current net weight = 3645kg and the gross weight = 10655kg the FT-30M would be looking to send: "\$\$;10655;10655\r" (Note: '\r' represents the Carriage Return character) (quotes not transmitted) The formatter to achieve this would be: "\$\$;[GR];[NT][CR]" see example B for the data stream on a PC.

# FT-30M Remote Button (RB)

Robust and waterproof, the RB can be conveniently located in the loading area of a waste collection truck or close to crane or fork-lift controls. It activates the same function as the on-screen FT-30M total weight print button or the partial load button. Green LED button status:

- Off = The scale is unstable due to the truck swaying
- On = Ready, the truck and scale is stable
- Flashes = To acknowledge the button press

Press to print and record a weight.

In Pick-up, Drop-Off and Totalising Modes: It works as per the Load Button, where the driver is On-Site picking up multiple loads from same customer.

The Remote Button LED will only turn green (Ready) when:

- 1. The Driver is 'On-Site'
- 2. Load is stable (within Stability Level)
- 3. There is a load available

## **SET-UP**

Set the printer to On and use the settings as shown >



Then press 🔇 to go back to the I/O menu screen. See next page for RB settings.

Note: The Remote Button should be connected with the FT30-M turned off. Otherwise the FT-30M needs to be power-cycled after the Remote Button is enabled in the I/O menu.



# FT-30M Remote Button (RB)

## **RB** settings

Com2 RS485 in the I/O menu screen.



A flashing Green LED means movement is detected, it will stay on when the scale has stablised. The stability level depends on the amount of machinery movement whilst weighing is taking place. See example below.

It reads and displays the RB version of firmware. Press the on-screen print button and the RB Green LED will light up. Press the RB and the on-screen print button will open and close. It means you can test it easily without having to go to a weighing screen.

Stability is a factor of the 'CountBy' setting. To modify that use the following sequence:



## Example. CountBy = 20kg

- 1 = Off Don't check for Stability LED always on
- 2 = Lo Must be within CountBy x 4, eg 80kg
- 3 = Med Must be within CountBy x 3, eg 60kg
- 4 = Hi Must be within CountBy x 2, eg 40kg



# FT-30M Inclinometer Installation & Set-up

Vehicles and mobile machines often operate in terrains with inclined surfaces. Examples include: logging trucks operating in forests, agricultural machines working on sloping fields and waste collection trucks loading on steep gradients. Most chassis mounted load cells will exhibit a cosine error when weight readings are taken on a slope and/or camber, often referred to as 2-axis X-Y inclines. An inclinometer device measures these angles and together with software in the FT-30M on board weighing indicator these weighing errors can be corrected (compensated).

FT-30M, together with tilt sensor model number SOLAR-2-30-2-RS485M-01 from Level Developments is designed to provide accurate, robust and easy to set-up +/-30° inclinometer correction in all modes. However, in Twin mode only channel 1 is corrected. In this document the terms 'inclinometer', 'tilt sensor' and 'slope sensor' are referring to the same device.

For accurate weighing results and better protection, it is preferable to attach the inclinometer on top of a chassis cross member and as close as possible to the geometric centre of the truck.

Connect the inclinometer thumb-turn M12 connector to the FT-30M COM2 - this is the RS485 port. Cable extenders are available on request.



In the example described below, the displayed weight will remain unaffected by Y-axis (inclines) and/or X-axis (tilts) up to +/-10°.

Note that the inclinometer should be connected while the FT-30M is turned off. Otherwise the FT-30M will need to be power-cycled after enabling the inclinometer function in the RS485 menu.



FT-30M onboard weighing indicator





Tilt, Roll, Side-ways slope or Camber



#### SOLAR-2-30-2-RS485M-01

from Level Developments

- Two Axis (X-Y) Inclinometer
- Measures +/- 30 degrees
- Hermetically sealed to IP67
- Aluminium construction
- Operating temperature rating -20°C to +70°C
- Compensated between -10°C & +60°C
- High accuracy, high resolution
- 2 metre PUR cable with overmoulded M12 connector





# FT-30M Inclinometer Installation & Set-up

#### Set-up

For accurate operation, the installed inclinometer requires a zero level reference point. Follow these instructions: Ensure the vehicle is on flat and level ground, preferably on a weighbridge.

For weighing system calibration, refer to the FT-30M user manual, available from Flintec's website.



## 1. Test / Zero ...



If there are question marks (?) or errors showing, check the connection and settings. No Term Resis = Terminal Resistor is deactivated

X = angle of chassis tilt (roll or side-ways camber)

Y = angle of incline (pitch, longitudinal slope or gradient)

XY Comp: = X+Y resultant angle which is used to calculate the cosine correction of the total weight

With X & Y angles close to 0°, cancel the current zero then set the Zero point:



The SOLAR inclinometer has internal filters to improve stability. Filter 4 is recommended for a typical industrial vehicle.



Filter index 1 2 3 4	Frequency	Damping	
Filler index	response (Hz)	time in Seconds	
1	0.125	8	
2	0.25	4	
3	0.5	2	
4	1	1	
5	2	0.5	
6	4	0.25	
7	8	0.125	

# FT-30M Inclinometer Installation & Set-up

## 2. Max X (10°)

Slide nubers to desired Max. X angle



## 3. Max Y (10°)

Slide nubers to desired Max.Y angle



## 4. Tilt Compensation (On)

RS485 2. Max X (10°) 3. Max Y (10°) 4. Tilt Compensate (On) Ensure the green tick is visible



## 5. Display XY (On)

To show angles on the main display ensure the green tick is visible



# FT-30M Printing on the RS485 COM 2 port

This guide helps users to connect and test the FT-30M onboard weighing indicator to an RS485 enabled printer on the Half Duplex RS485 COM 2 port.



Don't connect an RS485 printer to COM 1. Connect RS232 devices only



Connect RS485 printer to COM 2 port Power 9-32 Volts from mignition live lo

mV/V signal from the load cells or sensors

FT-30M	COM 2 - RS485 p	port
Pin no.	Typ. colour	Description
1	BROWN	+12V Supply max 0.5A. Don't use
2	WHITE	R485 Half-Duplex D-
3	BLUE	GND 0 Volts Ground
4	BLACK	R485 Half-Duplex D+

RS485 pr	inter connectior	ns - based on Syncotek RME3/SP-MP-E3
Pin no.	Signal label	Description
3	TXD	RS485 Half-Duplex A
5	RXD	RS485 Half-Duplex B
9	GND	Ground





Rewireable 4-pin M12 connector



Overmoulded 4-pin M12 cable-connector

\*Refer to printer manual for connections and settings

Power the printer from an igition live source Fitting an in-line fuse is recommended



SP-MP-E3/RME3\*

On the FT-30M, navigate to RS485 settings:

1. +12V (not used)

2. D- White

3. GND Blue

4. D+ Black

FT-30M COM 2



5. Sig B

9. Gnd

3. Sig A

Check the settings are:

- 1. RS485 Power (Off)
- 2. Set Baud Rate to 9600

Fixed software settings: Data Bits = 8 Parity = None Stop bits = 1

- 3. EM100 (Off)
- 4. Remote Button (Off)
- 5. Printer (On)
- 6. Inclinometer (Off)

# FT-30M onboard flow meter mode

Flow meter is a mode aimed at agricultural trailer hoppers & vehicle vesseled bodies to:

- 1. Display the flow-rate of a fluid or semi-fluid material as it unloads in real-time (kg or lbs)
- 2. Determine the time to empty a hopper or body
- 3. Measure and record the weight of fluid or semi-fluid delivered to site

#### Flow rate

Flow meter mode measures the loss-in-weight over time from a loaded vessel supported on load cells installed to a steel structure. It shows the Net weight at the start of discharge, the live flow-rate, the net amount delivered and the net weight remaining.





Calibration is the same as in single channel mode, refer to FT-30M manual: www.flintec.com To connect the optional Remote Button - refer to RPB section in the main manual.

#### Instructions for use:

#### 1.

Arrive at receiving site. Vessel body is full and ready to discharge, net weight is displayed. Make sure site equipment does not connect to the hopper/body or has no effect on the Net weight when connected.



# FT-30M onboard flow meter mode



# Alarm and PPCO Settings

## **Alarm Settings**

Pin code is required. The FT-30M will show the warning bar when the truck is close to being fully loaded. Amber means WARNING, the vehicle is close to its maximum legal load. Red means OVERLOAD, maximum legal payload is reached.



# Alarm and PPCO Settings

0       4,       2       5,       5,       3       5,       5,       1       5,       1       1       1       1       2       6,       4       0       0       0       1       1       3       7,       5       1       1       1       kg       kg       1 <td< th=""><th><b>9. Set Gross Weight</b> Swipe up or down to set the desired Gross weight alarm setpoint. (26,400kg) Press:</th></td<>	<b>9. Set Gross Weight</b> Swipe up or down to set the desired Gross weight alarm setpoint. (26,400kg) Press:
Gross Set Point 26400 kg Delay 0 secs	<b>10. Alarm 1 - Delay</b> Select alarm delay. Press: 0 secs
1 2 3 3 4 5 5 5	<b>11. Set Delay</b> Swipe up or down to set the desired delay setpoint. (3s)         Press:        If the weight of the truck exceeds 26,400kg for a sustained 3 seconds, the alarm will trip.
Gross Set Point 26400 kg Delay 3 secs	<b>12. Test Alarm</b> Externally fitted alarms can easily be tested. Press: 🞯 to test the alarm. To return press
Gross Set Point 27000 kg Delay 2 secs PPCO On	<ul> <li><b>13. Alarm 2 -Red</b></li> <li>Alarm 2 can be set by following the same steps above.</li> <li>Packer Plate Cut-Off (PPCO) can be toggled on/off by pressing PPCO X</li> </ul>

## Alarm Bar

The alarm bar is displayed below the weight on the Home Screen. When the gross weight of the truck hits 80% of the set Amber limit, the bar will fill at 2% increments from 80% to 100%.

Using the alarm settings above where Alarm 1 = 26,400kg and Alarm 2 = 27,000kg



Alarm bar is empty when gross weight is < 80% of Amber weight.



Amber alarm threshold reached. Alarm 1 triggered.

Alarm bar incrementally fills. (88%)



Red alarm threshold reached. Alarm 2 triggered.

Alarms will remain triggered until the vehicle is unloaded.

# Load Mode (Pickup/Delivery)

Load Mode (Pickup/Delivery) allows the driver to pickup from or deliver to a user site, with the display showing 0kg each time. When the driver arrives at a site, he logs on to the site with the On-site button and can set the customer name. He then picks up the load, with the display showing the weight from that customer.

He will then press Off-site to print a ticket for the customer. The display will then show 0kg ready for the next customer.



To set up the indicator for use in Pick Up / Delivery mode use Customer Profiles must be created and uploaded first as outlined on pages 66-67. Then use the following sequence to select Pick Up / Delivery mode for the home screen. To exit Pick Up / Delivery mode use the same sequence but select Single Channel or Dual / Twin Channel mode in step 7.

Templates for printing tickets can be created and uploaded as outlined in pages 64-67.



# Load Mode (Pickup/Delivery)



# Pickup Mode: Single Pickup per Customer Site

## User Guide

This workflow allows you to pick up a single load from a customer site and print an accompanying ticket. Subsequent customer sites can be visited, printing a ticket for each. The device display will return to zero between each site.

Customer profiles can be uploaded in advance via USB as detailed on pages 66-67.



# Pickup Mode: Single Pickup per Customer Site



Ticket creation and editing can be done with a text editor and uploaded to the device via USB. Details on pages 64-67.

LOAD

Sign:

3590 kg

LOAD

Sign:

5390 kg

1790 kg

LOAD

Sign:

# Pickup Mode: Multiple Pickups per Customer Site

## **User Guide**

This workflow allows you to pickup multiple loads from a single customer site and print an accompanying ticket at the end. The device display will return to zero between each load. The ticket will highlight each independent load that was picked up for that customer. Customer profiles can be uploaded in advance via USB as detailed on page 66-67.



# Pickup Mode: Multiple Pickups per Customer Site



Ticket creation and editing can be done via a text editor and uploaded to the device via USB. Details on page 64-67.

# **Printed Ticket Templates**

## **Creating and Editing Printed Tickets**

Create and edit printed ticket templates using a text editor such as Notepad. (Do not use MS Word or similar word processor).

Using the available commands you can customise the ticket's content and layout. The print ticket file needs the name:

#### FT\_30M\_Printout\_Style.txt

On a USB memory stick, create the directory (folder): FT-30M

Copy the <u>FT\_30M\_Printout\_Style.txt</u> into this folder. This can then be uploaded directly to the device via the USB interface.

## Template File

	FT_30N	/_Printout_Style	- Notepad	-		
File Edit I	Format View	Help				
ft-30m-pr	rintout					^
pl						
pc,Custor	ner:					
pl						
pl,Cleans	it Waste Se	ervices				
P1 Condid	FE CE22 3PT	r				
nl Tel· (	28234 56789	- 				
nl	50254 5070.					
pl.Vehicl	le: YK62 PE	3C				
ptd,						
pl						
pl,						
pll,Load						
plw,Total	l Site					
pl,						
pt						
pnw, Net:						
nl Sig.						
p1,						
pl						
pl						
pl						
pl						
pl						
						~
<						>
				_	_	

## **Resulting Printed Ticket**

ft-30m-printout	
pl,Cleanit Waste Services	Cleanit Waste Services
pl,Clean Rd	Clean Rd
pl,Cardiff CF22 3PT	Cardiff CF22 3PT
pl,Tel: 02920 111 www.cleanit.com	Tel: 02920 111 www.cleanit.com
pl,Vehicle: YY93 PBC	Vehicle: YY93 PBC
ptd	09:28 02-06-2016
pl	
pnw,Net:	Net: 1,130 kg
pgw,Gross:	Gross: 11,130 kg
ps	
pl,Sig:	Sig:
pl	
pl	
ps	
pl3	

## **Upload to Device**

To upload the template file to the device, navigate to the USB menu and connect the flash drive when prompted.



# **Printed Ticket Templates**



## Printed Ticket Template Commands

The following list are commands that allow a ticket to be created and edited to suit the user. Any unrecognised commands will be ignored. To print a duplicate ticket: copy and paste the code with several pl. lines (empty) in-between.

Command	Function	Example Print Output
ft-30m-printout	File Header: must be on first line to show correct format	-
pl	print an empty line	
pl,Flintec UK	print the line: "Flintec UK"	Flintec UK
pl3	print 3 blank lines	
ps	print full line separator	
pt	print time	
pd	print date - according to date-format	
pdt	print date and time on same line	
ptd	print time and date on same line	
pc,Customer:	print customer: in Load Mode doing Pickup or Delivery, this will print 'Customer name' where xxxx will be supplied when going 'On-Site'	
pnw,Net Weight:	Prints the current net weight (in full line: 32 characters)	Net Weight: 2,550 kg
pgw,Gross Weight:	Prints the current gross weight (in full line: 32 characters)	Gross Weight: 2,550 kg
plw,Load: -	Prints the current load weight or a list of load weights (in full line: 32 characters)	Load: 2,550 kg or: Load 1: 1,750 kg Load 2: 2,550 kg Load 3: 0,820 kg Load 4: 5,550 kg
pnwch1	Print Net weight Chan 1 (Twin Mode)	
pnwch2	Print Net weight Chan 2 (Twin Mode)	
pgwch1	Print Gross weight Chan 1 (Twin Mode)	
pgwch2	Print Gross weight Chan 2 (Twin Mode)	

# **Customer Lists**

## **Creating and Editing Customer Lists**

Create and edit customer lists using a text editor such as Notepad. (Do not use MS Word or similar word processor).

Using the available commands you can customise.

The customer list file needs the name:

FT\_30M\_Customer\_List.txt

On a USB memory stick, create the directory (folder): FT-30M

Copy the FT\_30M\_Customer\_List.txt into this folder.

This can then be uploaded directly to the device via the USB interface.

## **Example Template File**

ft-30m-cus	stomerlist	
cust-edit		
cust-add		
Customer A	4	
Customer I	3	
Customer (	0	

×1 🚫	Edit Customer	∕∕ x5
	Add new Customer	$\frown$
Customer	1. Customer A	
$\sim$	2. Customer B	$\sim$
$\bigcirc$	3. Customer C	$\bigotimes$

## On the Device

After successfully uploading the customer list file, your defined customers will appear on the customer selection step as show above.

This screen is presented to you when you log onto a site using Pickup/ Delivery Mode.

## Customer List Commands

The following list are commands that allow you to setup the customer list file. Any unrecognised commands will be ignored.

To print a duplicate ticket: copy and paste the code with several pl. lines (empty) in-between.

Command	Function
ft-30m-customerlist	File Header:
	must be on first line to show correct format
cust-edit	Optional - Show "Edit Customer" Option in iWheel
cust-add	Optional - Show "Add Customer" Option in iWheel
cust-delete	Optional - Show "Delete Customer" Option in iWheel
cust-upload-files	Optional - Show "Upload files <<< USB" Option in iWheel
cust-download-files	Optional - Show "Download files >>> USB" Option in iWheel
Customer1 Name	Adds the customer name to the device
Customer2 Name	Adds the customer name to the device

# **USB Transfers**

## **User Guide**

The USB interface allows for easy uploads and downloads. Compatible files can be loaded onto a flash drive and inserted into the device. Software updates, printed ticket styles, customer lists can all be uploaded in this way. Weighing transactions can also be downloaded to a USB device.



# **Essential Terms**

Terms	Meaning
GROSS	Or GVW (gross vehicle weight) or GMW (gross mass weight) is the total truck weight (NET + TARE).
NET	Or Net Load or Payload is load weight in the truck body.
TARE	Is the unladen weight of the empty vehicle.
LOAD	A partial weight which adds to, or subtracts from, the overall (NET) weight of a payload, when loaded onto, or unloaded from, a container/vehicle.
SITE LOAD	Is the total weight of material collected from, or delivered to, a customer's site. For example: The aggregate waste collected from several wheeled bins.
ALARM	An alarm sounder or flashing beacon will activate when alarm set-point is reached (where fitted).
ON SITE	Arrival at a site for pick up or delivery of goods, a customer name can be logged at this point.
MODE	Weighing modes are Gross, Net, Tare, Load, Percent, Split weights. These are different ways of showing loaded vehicle weights.
PAYLOAD	Is the NET weight.
TRIGGER	A time delay before the alarm is activated.
CALIBRATION	Is necessary on all new installations. Allows the unit to calculate and display measured values against previously stored calibration points.
FILTER	Filters the raw counts of the analogue to digital converter to achieve stable readings.
DIAGNOSTICS	Gives the technician information with which to troubleshoot.
DRIVER ZERO	The home weighing driver zero screen is used to remove 'zero drift' under service conditions and will only zero the display where the drift is within $+/-$ 500kg.
CALIBRATION ZERO	Is the units's calibrated zero weight value. That value is stored every time the on-board weighing system is calibrated.
OUTPUT	This is the signal from the load cells.
RS485, RS232	Digital signals used to transfer data from one device to another.
LOAD MODE	A feature allowing individual containers to be weighed in Pickup or Delivery Mode.
PRINT TICKET	A printed weight receipt.
COUNT BY	Displayed resolution, e.g. 1, 10, 20, 50 100, 200 kg or lbs.
	Packer (compaction) Plate Cut Off. A compaction plate operating in the rear hopper of a waste truck compacts wastes.
PPCO	When the alarm is triggered a 24v (supply volts) feed from the FT-30M connected to a PLC or a controller on the compaction unit switches it off and prevents the RCV crew from loading any more wastes.
	The compaction unit will reactivate after the all the waste has been ejected into a tip or waste transfer station. The compaction unit will reactivate when load is tipped off.
SMASH BUTTON	A button on the back of the truck to allow each load to be weighed, printed and transaction stored.
mV/V	millivolts per volt - the ratio of load cell signal voltage against excitation voltage, used for weight measurement
mV / V	The signal from the load cell or group of load cells is measured in mV (millivolts), 1mV = 0.001 Volt. These are very small voltages the indicator uses to measure weights.

# Quick Start Guide - Tippers & Bulk Haulage

Note: Select Single Channel, Dual Channel or Twin Channel from the Truck Mode Menu (page 14) for this functionality



## Power On and Use

Turn ignition on and FT-30M powers up. Vehicle weight displays. For quick & easy navigation, a finger press guides users through functions. User function settings allow frequently used adjustments to be made.

Critical settings are pin code protected.

## Good to Know

GROSS Gross Vehicle Weight is the total truck weight.

NET + TARE = GROSS

- NET Net Load or Payload is the load weight in the truck.
- TARE Is the unladen empty weight of the vehicle.
- ALARM The alarm will activate when a pre-set set point is reached. Where fitted, a sounder or flashing beacon device will activate.
- ZERO Weighing systems may drift from zero when unloaded, e.g. because of debris or dirt, a zero button allows a true zero to be set.

Only available if gross weight is within +/- 500kg of tare weight.

MODE Net, Gross, Percent, Load, Site are all modes (different ways of displaying a weight).


# **User Functions**

#### **User Functions and Settings**

The FT-30M is configured & calibrated for the application. Not all functions are available, some require additional devices. Faded button = function not available or out of range. Strike-through = not activated.

• • •	MENU	To access user functions. Will revert to HOME after 45 seconds of no activity.
<b>A</b>	HOME	To go back to HOME screen.
â	GROSS	Total vehicle weight. Press to view another weighing mode.
	NET	NET is the weight of materials loaded on the vehicle. Press for Gross.
2	PERCENTAGE	Is the PERCENTAGE of GROSS weight. Press to view another weighing mode.
>0< >0< >0<	ZERO	Press to display ZERO. Max range +/-300kg from calibrated zero weight.
8 🔒	PRINT	Print displayed weight. Press to PRINT.
<sup>4</sup> 30, <b>2</b>	MOTION DETECT	Display shows '' after 30 seconds of motion. Touch screen to display HOME.
	ENTER	To accept a value.
$\overline{\Diamond} \bigcirc \bigcirc \bigcirc \bigcirc$	EXPLORE	For next page or back a step.
1	ALARM SET-OFF	AMBER ALARM has been triggered. Press to mute.
	ALARM MUTED	AMBER / RED ALARM has been triggered AND muted.
0	ALARM SET-OFF	RED ALARM has been triggered. Press to mute.
	COPY TO USB STICK	Copy user data to USB stick.
* * *	BRIGHTNESS	Toggle between Low, Medium and High.
14 10 15 11		To adjust the time or select a value or customer
16         12           17         13           18         14	IWHEEL	Finger swipe to select setting. To accept press:
000	TIME	Press to adjust the time with the adjustment iWHEEL.
	INFORMATION	Press to view: Date & time. Serial no. Software version. Calibration time & date. Tare and Gross. Alarm status & settings.
	BLEEP VOLUME	Toggle between off, Low, Medium and High.
$\mathbf{\Sigma}$	SETTINGS	To access passcoded settings menu.
44	ON-SITE DELIVER	Print & record delivered loads. Arrive on site, press & select or enter a customer name.
A	OFF-SITE DELIVER	Press when leaving site.
A~	ON-SITE PICK-UP	Print & record collected loads. Arrive on site, press & select or enter a customer name.
A.,	OFF-SITE PICK-UP	Press when leaving site.
<b>(</b> )	LOAD COLLECT	Press to record individual container or part loads from or to customer sites. LOAD and SITE weights are added to NET.
		Amber means WARNING, the vehicle is close to its maximum legal payload.
	WARNING BAR	Red means OVERLOAD, maximum legal payload is reached. Unload the vehicle.
		When gross weight reaches 80% of the weight warning alarm setting, the warning bar shows and increments in steps of 2% until it reaches 100%

### **Quick Start Guide - Waste Collection**

Note: Select Delivery (Ch1) from the Truck Mode Menu (page 14) for this functionality



#### Power On and Use

Turn ignition on and FT-30M powers up. Vehicle weight displays. For quick & easy navigation, a finger press or swipe gesture guides users through functions. User function settings allow frequently used adjustments to be made. Critical settings are pin code protected.

#### Good to Know

GROSS Gross Vehicle Weight is the total truck weight.

NET + TARE = GROSS

- NET Net Load or Payload is the load weight in the truck.
- TARE Is the unladen empty weight of the vehicle.
- ALARM The alarm will activate when a pre-set set point is reached. Where fitted, a sounder or flashing beacon device will activate.
- ZERO Weighing systems may drift from zero when unloaded, e.g. because of debris or dirt, set zero button allows a true zero to be done.
- SITE A customer where loads are collected from or delivered to.
- LOAD Is an individual load collected or delivered to or from a customer's site.



# **User Functions**

#### **User Functions and Settings**

The FT-30M is configured & calibrated for the application. Not all functions are available, some require additional devices. Faded button = function not available or out of range. Strike-through = not activated.

• • •	MENU	To access user functions. Will revert to HOME after 45 seconds of no activity.
Δ	HOME	To go back to HOME screen.
6	GROSS	Total vehicle weight. Press to view another weighing mode.
	NET	NET is the weight of materials loaded on the vehicle. Press for Gross.
<b>1</b>	PERCENTAGE	Is the PERCENTAGE of GROSS weight. Press to view another weighing mode.
>0< >0<	ZERO	Press to display ZERO. Max range +/-300kg from calibrated zero weight.
	PRINT	Print displayed weight. Press to PRINT.
	MOTION DETECT	Display shows '' after 30 seconds of motion. Touch screen to display HOME.
	ENTER	To accept a value.
	EXPLORE	For next page or back a step.
	ALARM SET-OFF	AMBER ALARM has been triggered. Press to mute.
	ALARM MUTED	AMBER / RED ALARM has been triggered AND muted.
	ALARM SET-OFF	RED ALARM has been triggered. Press to mute.
	COPY TO USB STICK	Copy user data to USB stick.
* * *	BRIGHTNESS	Toggle between Low, Medium and High.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		To adjust the time or select a value or customer
<b>16 12</b> 17 13	iWHEEL	Finger swipe to select setting. To accept press:
	TIME	Press to adjust the time with the adjustment iWHEEL.
	INFORMATION	Press to view: Date & time. Serial no. Software version. Calibration time & date.
	BLEEP VOLUME	Tare and Gross. Alarm status & settings. Toggle between off. Low. Medium and High.
	SETTINGS	To access passcoded settings menu
		Print & record delivered loads. Arrive on site, press & select or enter a customer
		name.
		Print & record collected loads. Arrive on site, press & select or enter a customer
		name.
	OFF-SITE PICK-UP	Press when leaving site.
<u>(</u>	LOAD COLLECT	Press to record individual container or part loads from or to customer sites. LOAD and SITE weights are added to NET.
		Amber means WARNING, the vehicle is close to its maximum legal payload.
	WARNING BAR	Red means OVERLOAD, maximum legal payload is reached. Unload the vehicle.
		When gross weight reaches 80% of the weight warning alarm setting, the warning bar shows and increments in steps of 2% until it reaches 100%.

FT-30M is an easy-to-use touchscreen weighing indicator. For vehicle loading machines with weight sensors, user friendly menus help users to configure, calibrate and make best use of totalising modes. Features include the ability to print & store weights or set targets and alarms.



- Safely load first time, every time
- Know what you're carrying
- Optimise payloads & avoid overloads
- Weigh each and every load
- Weigh when and where it's needed
- Measure the profit of every journey

• Better route planning

Know when target weights are hit

For logistics vehicles and bulk handling machinery, totalising mode is used to weigh materials at

the point of loading or unloading. Materials being moved with mechanical handling equipment can be weighed and totalled using one of two totalising modes:

Totalising Pick-up for a truck loading or unloading itself with a vehicle mounted crane or hoist





Totalising Loader for machinery loading another vehicle



= weighing load cell or sensor

# 

#### **Contents:**

- 1. Select the totalising mode for the application.
- 2. Calibrate with weights
- 3. Calibrate without weights
- 4. Set Tare Totalising Pick-up only.

- 5. Filters
- 6. Remote Button
- 7. Totalising Pick-up User Guide
- 8. Totalising Loader User Guide

#### 1. Select the totalising mode for the application

Connect load cell or sensor to channel 1



#### 2. Calibrate with weights

Weighing scales are typically calibrating using a pre-weighed load or known weight block



#### 3. Calibrate without weights

Calibration can also be done by entering load cell mV/V values using the touchscreen. It is typically used where known dead-weights are not available. The mV/V values are read from the load cell nameplate, calibration certificate or datasheet and added to the existing dead load mV/V. Should a discrepancy with a weighbridge or scale become known, adjust mV/V values and re-enter in the mV/V calibration page or perform a known-weight calibration.

#### Read the no-load mV/V value

Ensure there is no-load on the lifting apparatus, raise off the ground. Read the no-load mV/V in the diagnostics page.



Write-down the no load Current mV/V value. E.g. 0.0125 mV/V

#### Example. Calculate the Span mV/V value.

The mV/V signal from the load cell at a capacity of 5 tonnes is 2mV/V (printed on the cell, datasheet or calibration certificate). The lifting apparatus maximum weight determines the scale capacity. E.g. Safe Working Load (SWL) = 2t. Calculate the maximum mV/V at 2 tonnes:

> Lift Capacity  $\frac{\text{Lift Capacity}}{\text{Load Cell Capacity}} = \frac{2t}{5t} \times 2\text{mV/V} = 0.80000 \text{ mV/V}$

> > add the no-load zero mV/V

0.8 + 0.0125 = 0.8125 mV/V this is the calculated Span mV/V signal value

Enter the Kg and mV/V values mV/V Calibration







Calibrate

Zero

Ensure there is no load on the lifting apparatus, raise off the ground, allow it to settle

Press



Slide numbers to 0.0125. Press Totalising mode





Calibrate Totalising mode Span





Ch1 Span	0         1         1         3         1         1         1         1         2         2         4         2         2         2         2         kg         kg	Calibrate Totalising mode Span	Slide numbers to the lifting capacity of the apparatus E.g. 2,000kg Press
Ch1 +	6         0         3         J         Zero           7         0         1         4         J           0.         8         1         2         5         0           1.         9         2         3         6         1           2.         5         4         7         2         mV/V	Calibrate Totalising mode Span	Slide the numbers to the calculated span mV/V value E.g. 0.81250 Press
Ch1 V	Zero Span Span Characteristics Span	Calibrate Totalising mode	Calibration is done Press 🔇 Press 🚺 Press 🖍

#### 4 Set Tare - Totalising Pick-up only

Adding the vehicle Tare (empty vehicle) weight in Totalising Mode (not Totalising Loader) provides users with Gross weights and Net weights. Amber and Red alarms can be set using the Gross vehicle weight. Refer to the FT-30M manual for alarm settings. Audio and/or visual alarm devices can be fitted to alert the driver and others to the amount of weight loaded.





#### 5. Filters

Setting filters is optional. FT-30M will respond to vehicle vibrations and the swaying of the lifting aparatus. FT-30M has digital averaging filters which can be used to dampen unwanted weight fluctuations. High settings will stabilise the display at the expense of rapid response to sudden weight changes. Increasing the averaging samples will result in a more stable reading but will extend the time it takes FT-30M to settle to a final reading.

= 1 second delay

= 16 second delay

5



Example 1, Single channel:

FLO	=	No filter = 10 samples per	second	
FL5	=	Average over 32 samples	= 32/10	= 3.3 second delay
FL7	=	Average of 128 samples	= 128/10	= 12.8 second delay

Example 2, Twin channel:

FLO	=	No filter = 4 samples per se	cond
FL2	=	Average over 4 samples	= 4/4
FL6	=	Average over 64 samples	= 64/4



#### 6. Remote Button

The Remote Button is optional and can be located in the loading area or close to crane or fork-lift controls. Its function is equivalent to theon-screen FT-30M Load (1) button.

Green LED button status:

- Off = The scale is unstable due to the apparatus swaying
- On = Ready, the truck and scale is stable
- Flash = To acknowledge the button press

Stability is a factor of 'CountBy'. Press to record a weight. E.g. CountBy = 20kg

- 1 = Off Don't check for Stability LED always on
- 2 = Lo Must be within CountBy x 4, eg 80kg
- 3 = Med Must be within CountBy x 3, eg 60kg
- 4 = Hi Must be within CountBy x 2, eg 40kg

When the driver is on-site picking-up multiple loads the Remote Button LED will only turn green (Ready) when:

1. The Truck is 'On-Site'

- 2. Load is stable (within Stability Level)
- 3. There is a load available

Set the printer to On and use the settings as shown >



Note: The Remote Button should be connected with the FT30-M turned off. Otherwise the FT-30M needs to be power-cycled after the Remote Button is enabled in the I/O menu.

	0	0
=		
	0	0

-

RS232	1. RS232 Power (Off)	
	2. Baud Rate (9600N81)	
	3. Terminator (LF)	
$\langle \rangle$	4. Printer (On)	
Printer	1. Check for BUSY (On) < >	
Printer	1. Check for BUSY (On) < > 2. Print Custom File (On) < >	
Printer	1. Check for BUSY (On) < >2. Print Custom File (On) < >3. Extra Linefeeds (1) < >	
Printer	1. Check for BUSY (On) < >2. Print Custom File (On) < >3. Extra Linefeeds (1) < >4. Signature (Off) <>	



#### 7. Totalising Pick-Up User Guide





#### 8. Totalising Loader User Guide

See section 1 for selecting this operating mode



Customer/On Site (x1)	Weigh a load	Unload / Release load		
Customer/On Site (x1) <b>100</b> kg Net: 160 Site Remaining: 340kg	Weigh another Ioad	Lift a load	Press the Gr	een button
Customer/On Site (x2)	Site load collected Done	Unload /	When Target Press	t Weight is reached, Release load
Next Site Resume Print	Print Resume Next Site	PressImage: bold with the second	al weight ck	Printed weight receipts are editable to show information needed. Weight receipts are stored internally for later download onto a USB stick.