

LOADMASTER FT2-PV Installation Guide



GENERAL

This scale system must be installed on a firm and level surface. Particular attention should be paid to the load bearing points at the end of each module. Note that if the area between the ends of the scale is too high it will cause weight errors by deflecting the sub-frame up into the bridge creating a bind. The same condition can be created if surface settling occurs, the center of the frame will not compress the surface at the same rate as the load bearing ends. This will create the same bind as the unlevel surface described above.

INSTALLATION STEPS

1. Site preparation. You should have a firm and level surface area that is at least one (1) foot wider and five (5) feet longer than the overall dimensions of the scale. For a temporary installation compressed stone is adequate. For any installation over 6 months it is recommended that concrete footers be poured below frost level.

2. Determine where your indicator will be installed and arrange the scale so the J-Box is located on the same side. Note that the J-Box is located behind an access plate just to the left of the welded FT2 nameplate and serial tag.



3. Set the first module. It's important that you remove each access plate and hook your chains to the structural beams, DO NOT lift the scale by hooking on to the deck, side channel iron skirts, or smaller 3" I-beam stringers found under the manhole covers. Approx weight for the lift is as follows:
 - a. 10' (x10') module is 5,900 lb.
 - b. 15' module is 8,000 lb
 - c. 17'6" module is 9,100 lb
 - d. 20' module is 10,200 lb
 - e. 23'4" module is 11,600 lb
 - f. 25' module is 12,300 lb



4. Skip this step if this is NOT a three (3) bridge system with a center “dead” section.

Install module separators on to the end of the frame. By bolting with four $\frac{3}{4}$ ” x $2\frac{1}{4}$ ” bolts supplied. (Two each side)



5. Place end module in place and bolt to the either the separator channels (3 bridge system) or the other module (2 bridge system). Using four $\frac{3}{4}$ ” x $2\frac{1}{4}$ ” bolts supplied. (Two each side)

6. Skip this step if this is NOT a three (3) bridge system with a center “dead” section.
Lower center bridge section between the two end scale sections.



7. Install splice bolts on all 4 corners of the center section. Using the 56 3/4" x 2 1/4" bolts supplied. (14 per corner)



8. Bolt the bulkheads to each end of the scale. Using four 3/4" x 2-1/4" bolts per end.

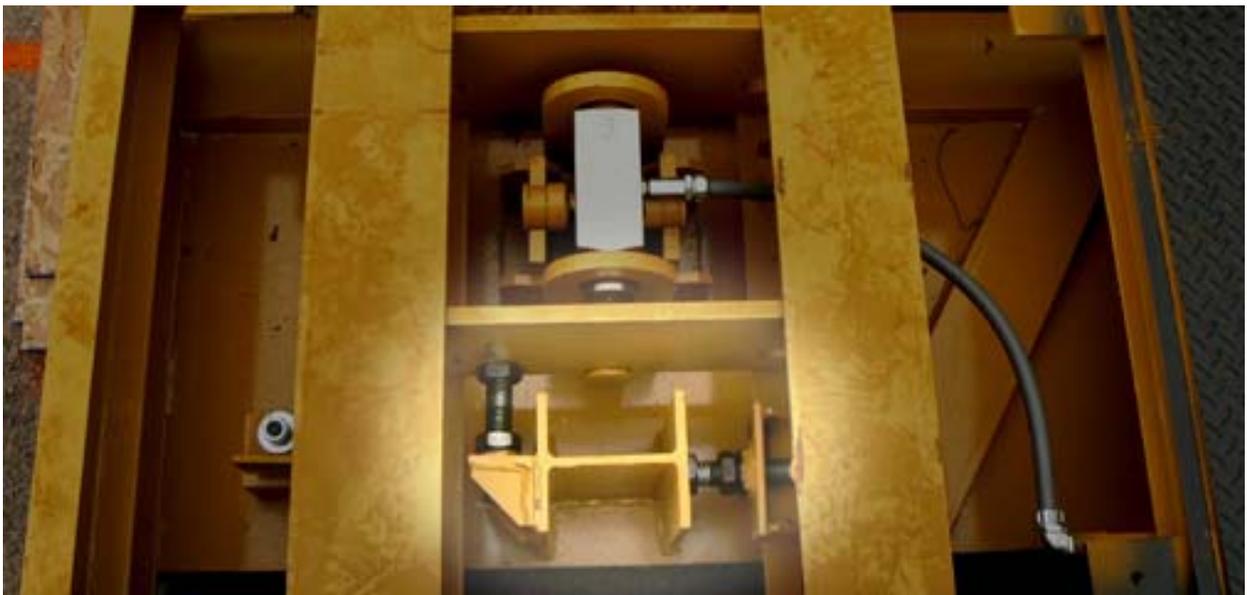


9. The optional steel ramps attach to the bulkheads, if you have ramps install them now. If you will be using a stone approach, build your approach now.

10. Remove the four shipping bolts. One located at each corner of the two end scale sections. It is suggested that you store them inside the scale so they are available when moving the scale.



11. Adjust the Bumper bolts to minimum of 1/8" and a maximum of 1/4" on all four corners of the scale sections. Total of eight bumpers per section.



12. All load cells should now be supporting some weight (check the tension on suspension links). If the installation surface is not perfectly level it may be necessary to do some shimming. Depending on the firmness of your installation surface it may be necessary to re-shim after some traffic has gone over the scale. To prevent overloading a corner (and for optimum accuracy), it's important that EACH load cell be supporting some weight without a load on the scale.
13. Each module is pre-wired internally to the junction box located under the center access plate found close to the center of the scale. Under that access plate you should also find the main cable coiled up for shipping. The main cable from one module is wired into the junction box of the next module and the main cable from that module is run to the digital indicator. Refer to drawing 241-1102-2 located at the end of this manual.
14. Your digital indicator (and printer if supplied) must be located inside a weather-proof building. This equipment is NOT weather-proof and must have a power source (110 VAC, portable generator or battery pack with inverter). Plug in your indicator and apply a concentrated weight to each load cell (human body is sufficient at this point). Each corner should read a weight within a graduation (20 lbs normally) of each other. If you see an error check your wiring – DO NOT ADJUST - look for broken wires or shorts caused by removing too much insulation at the terminal block. Once you have each corner weighing within a graduation THEN your scale is ready for calibration by a local scale servicing company.
15. Install deck cover plates AFTER simple corner check described above. Your scale is now ready for calibration with certified test weights.

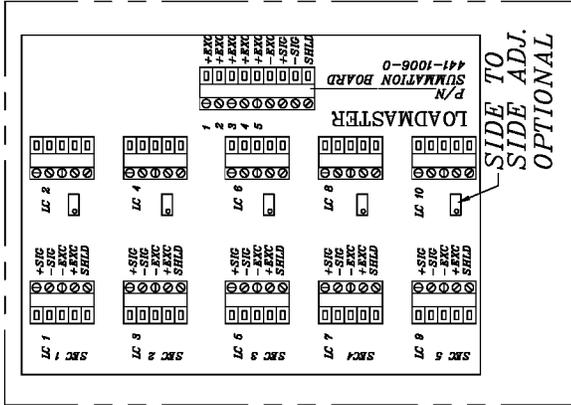
CALIBRATION GUIDE

1. Do NOT attempt to make any calibrations until all corners are weighing within a single graduation as described in the above section. Keep in mind that any adjustments should be minimal and doing it before the scale is properly setup will make things much more difficult.
2. Adjust sections. The goal is to apply a concentrated load over each section of the scale (or end of each module) and adjust them to indicate the same weight. The higher the weight the better. Once all the sections indicate the same weight then the overall calibration (see below) will be made to give you an accurate weight.
 - a. It's important to note that the load cells in each section are adjusted as a pair and that on a standard installation there is not an adjustment for individual load cells.
 - b. The section adjust pots are located in the summing box (by the indicator). Note that this is NOT the junction box found under the manhole in the scale.
 - c. If this is a "multi-module" installation it's important while adjusting sections to keep your concentrated load on a single module.
3. Overall calibration. Once all the sections have been adjusted and indicating within tolerance you will make an overall calibration in the digital indicator. This process varies greatly depending upon your make and model of indicator. If we supplied your indicator you should find an operators manual for that indicator included with this manual. Look up the section for calibration and follow those instructions.

LOADMASTER FT2-PV Preparation for Transport

1. Remove all access covers, including the corners and the junction box cover.
2. **IMPORTANT** – disconnect the main cables, coil them up and store them **BEHIND** the junction box access plate. The access plate for the junction boxes can be put back in place now.
3. Adjust bumper bolts (see illustration provided in the installation section of this manual) back into shipping position to stop deck movement.
4. Install shipping bolts (see illustration provided in the installation section of this manual).
5. Remove splice bolts from the center bridge section (see illustration provided in the installation section of this manual).
6. Remove center dead bridge (if applicable) and **SET TO THE SIDE**. This dead section should be loaded on the truck last and **ON TOP** of the live weigh modules. If the center bridge is shorter than the live modules the self-contained frame will be **WILL BE DAMAGED**.
7. Remove spacer channels (if applicable) and place them on top of the center dead bridge.
8. Remove the approaches, steel or stone. Unbolt the bulkheads and place them on top of the center dead section.
9. Hook your chains to the main structural beams found under the manhole covers and load the modules on the trailer for shipment. **DO NOT** hook onto the smaller 3” I-beam stringers, the deck plate or side channel iron skirts. Replace the manhole covers **BEFORE** stacking the next module.
10. Load the center dead section **ON TOP** of the live weigh modules. The spacer bars and bulkheads should be loaded on top of the center section.
11. Box up the indicator (and printer) and place in the cab of the truck. This equipment **MUST** be kept dry.

SUMMATION BOX HOFFMAN ENCLOSURE HJ1008HW



MAIN CABLE FROM SCALES TO SECTION ADJUST BELDON CABLE #8778 WIRE COLORS

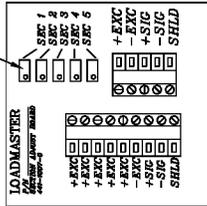
BLK/GRN PAIR USE GRN +EXC SEC 1
BLK/YEL PAIR USE YEL +EXC SEC 2

YEL/BLK PAIR USE BLK -EXC ALL SEC
BLK/WHT PAIR USE WHT +SIG ALL SEC
BLK/RED PAIR USE RED -SIG ALL SEC
SHEILD ALL TOGETHER

SECTION ADJUST POTS

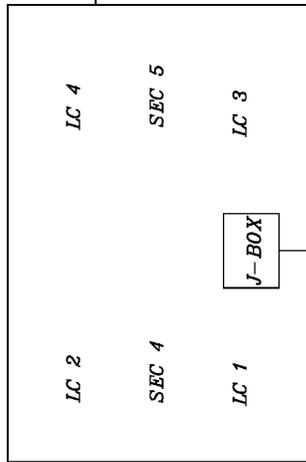
BELDON CABLE #8723

GRN +EXC
BLK -EXC
WHT +SIG
RED -SIG
SHEILD BARE

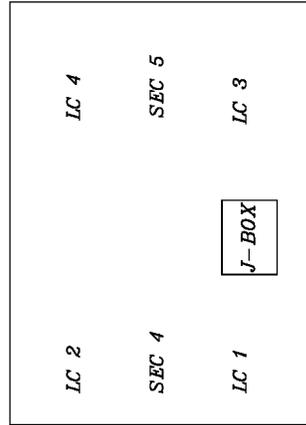


SECTION ADJUST BOX NEAR INDICATOR HOFFMAN ENCLOSURE #A-806CH

AS SHOWN SEC. 1 & 2



AS SHOWN SEC. 3 & 4



BLK/BLU PAIR USE BLU +EXC SEC 3
GRN/BLK PAIR USE BLK +EXC SEC 4
YEL/BLK PAIR USE BLK -EXC ALL SEC
BLK/WHT PAIR USE WHT +SIG ALL SEC
BLK/RED PAIR USE RED -SIG ALL SEC
SHEILD ALL TOGETHER
WIRE SEC 1 + EXC INTO LOAD CELL POS 5 + EXC. IN J-BOX OF OTHER SCALE
WIRE ALL THE OTHER 4 WIRES INTO CELL POS. 7 IN THE SAME BOX

LOAD CELL WIRING
80210 DBL BEAM
+EXC = RED
-EXC. = BLK
+SIG = GRN
-SIG = WHT

L/C NUMBERING AT SCALE

TO DIGITAL SEE OWNERS MANUAL

BELDON CABLE #8723

SECTION ADJUST BOX

BELDON CABLE #8778

NOTE THE BOARD WILL HAVE 5 SECTIONS AND MAY BE WIRED IN SECTION 1 AND 2 INSTEAD OF 4 & 5

LOADMASTER

SCALE AND ELECTRONICS
HOLTGREVEN SCALE AND ELECTRONICS CORP.
10000 WOODLAND AVENUE
PINDRAY OHIO 45640
(419) 422-4779

TITLE: WIRING DIAGRAM FOR 2 MODULE RENTAL
DATE: 8-6-08 DRN BY: MARK HOLTGREVEN
SCALE: N/A DWG NO: 241-1122-2

SECTION 5

CALIBRATION

The UMC600 must now be calibrated. Use the following procedure:

- A. Ensure that the load cell(s) or scale base has been correctly wired to the unit, and is "empty" (no load).
- B. Close (upward) Switch #3 ("Dead Load"). The MSD (leftmost) display digit should be flashing "C".
- C. Adjust the potentiometer marked "Dead Load" to obtain a reading at or near "Zero" (0). Note that a reading of exactly "0" is not necessary. Also note that a clockwise adjustment increases (makes more positive) the weight reading.
- D. Open (downward) Switch #3.
- E. Close (upward) Switch #1. The weight may change from a "0" reading, which is acceptable. The four (4) leftmost function keys now assume the following functions:

ZERO	NET GROSS	TARE	lb/kg CONV
------	--------------	------	---------------

NORMAL OPERATION

BECOMES

ZERO CAL	DIGIT SEL	DIGIT INC	SPAN CAL
-------------	--------------	--------------	-------------

DIGITAL CALIBRATION

- F. Push the "ZERO" key.
The display should read ---

CAL

and then return to a "0" reading.
- G. Now place weight on the scale or load cell corresponding to at least 10% of full scale capacity.

- H. The span may be corrected in either of two (2) ways:
1. Correcting the span value using the "DIGIT SELECT" and the "DIGIT INCREMENT" keys, as follows:
 - a. The "NET/GROSS" key becomes the "DIGIT SELECT" key; each push of this key will "select" one of the display digits, starting from right (LSD) to left (MSD) digit. The "selected" digit will "flash" intermittently.
 - b. The "TARE" key becomes the "DIGIT INCREMENT" key; once a specific display digit has been selected, each push of this key will "increment" that digit from "0" to "9", then back to "0", without affecting other display digits.

- OR -

2. Enter the span value sequentially via the keyboard.

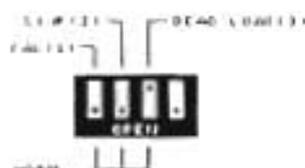
After the display reading has reached the correct value, push the "lb/kg CONV" key.

The display will read --
for a second, and then return
to the correct weight reading.

CAL

- J. If, instead the display
reads -----
return to the Digital Configuration
Parameters, reverse Parameter #4 (Hi/Low Span), and
recalibrate.
- Err 10
- K. Recheck the "Zero" weight by emptying the scale.
- L. Open (downward) Switch #1.
- M. Replace the black display filter.
- N. Close the center bar and tighten the knurled captive fasteners. Seal the unit if used in a "Legal - For - Trade" application.

CALIBRATION



WITH NO LOAD ON SCALE:

SET DEAD LOAD SWITCH ON AND ADJUST DEAD LOAD POTENTIOMETER TO NEAR ZERO.

SET CAL SWITCH ON AND PUSH "ZERO" TO OBTAIN "CENTER OF ZERO"

APPLY LOAD GREATER THAN 50%:

USE KEYPAD TO ENTER DESIRED READING AND PUSH "ENTER".

RETURN SWITCH TO OPERATE MODE

NOTE:

AZM OFF DURING CALIBRATION

DEAD LOAD DISPLAY PROVIDES SIGNAL REF.

STRAIGHT AVERAGING APPLIED DURING CAL.

CALCULATIONS EXAMPLE: CAPACITY = 200,000 LBS X 20 LB

NUMBER OF GRADS = 200,000 / 20 = 10,000

CONFIGURATION

SET "1" = 100 (10,000 GRADS)

SET "2" = 20 (RESOLUTION)

DETERMINE THE LIVE LOAD SIGNAL RANGE:

LOAD CELLS RATED AT 2MV/VRATED AT 3MV/V

2MV/V X 10V (EXCITATION) = 20 MV

3MV/V X 10V = 30 MV

DEAD LOAD (EST)..... = 5 MV

= 7 MV

LIVE LOAD..... = 15 MV

= 23 MV

CONFIGURATION

SET "4" = HI (0.7 TO 2.0 MV/V)SET "4" = LO (1.7 TO 3.3 MV/V)

OTHER FACTORS TO NOTE:

AZM/PAZ 1.9% X 200,000 = 3800 LBS

OVERRANGE 103% X 200,000 = 206,000 LBS

MIN CAL LOAD 10% X 200,000 = 20,000 LBS

ANALOG SENSITIVITY:

0.7 MV/V X 10V = 7 MV, 7 MV / 10,000 GRADS = 0.7 MICROVOLTS/GRAD

SENSITIVITY = 0.3 MICROVOLTS, BUT TO HANDLE H-44 REQUIREMENTS, WE NEED A FACTOR OF "4", OR 1.2 MICROVOLTS/GRAD. SO THAT EVEN IF WE CAN CALIBRATE THE LOWER SIGNAL RANGE, WE MAY FAIL ACCEPTANCE TESTING.

WITH THIS IN MIND, CHECK FOR MINIMUM LIVE LOAD OF 12 MILLIVOLTS FOR 10,000 GRADS OR REDUCE THE NUMBER OF GRADS ACCORDINGLY.

SECTION 7

SERIAL CONFIGURATION

Serial Ports #1 and #2 are both ACSII - compatible outputs. The serial format is compatible with most printers, scoreboards, and other remote devices. Each output can be disabled, set for "print on demand" mode, or set to output data continuously.

SERIAL PORT # 1 is a bidirectional ("full - duplex") port, using RS232C, 20mA, or RS485 transmission .

SERIAL PORT # 2 is a simplex (output only) port which has both an RS232C output or a 20mA current Loop output.

SECTION 7.2 - DATA FORMATS

All serial characters are in ACSII - compatible format and consist of the following:

- 1 Start Bit
- 7 Data Bits
- 1 Parity Bit (ODD Parity)
- 1 Stop Bit

SECTION 7.3 - DEMAND, CONTINUOUS, OR RS485 DATA OUTPUT

The transmission of serial data can be initiated in either of three (3) ways, as follows:

"DEMAND" Mode:

The "Demand" mode is used to interface to printers, and requires a manual "Print" command (either from the front panel or from a remote switch) to initiate the output data. To comply with "Legal-For-Trade" regulations, "Demand" output data is inhibited during the following conditions:

- * Scale in Motion
- * Positive Overload
- * Negative Overload
- * Negative Gross Weight Displayed
- * Unit in "Display Check" Mode
- * Other "Non Normal" Display Mode

Note: a setting is provided to turn "motion" off.

In "Demand" mode, selection can be made to print Gross/Tare/Net when in Net. If either Port is set to "Print on Demand" mode, the format will be:

<STX> <POL> <DATA> <SP> <LB/KG> <SP> <GR/NT> <CR> <LF>

P A R A M E T E R " 1 4 " - S E R I A L S E L E C T

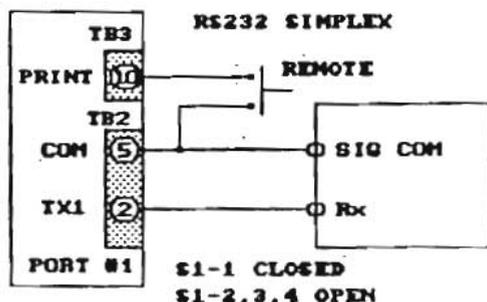
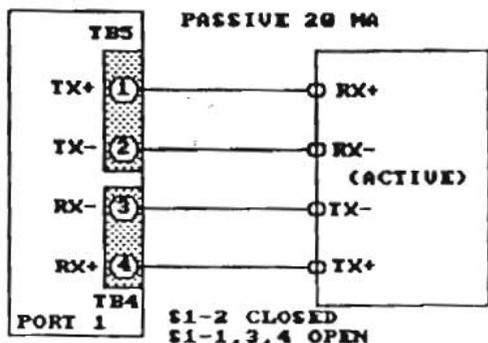
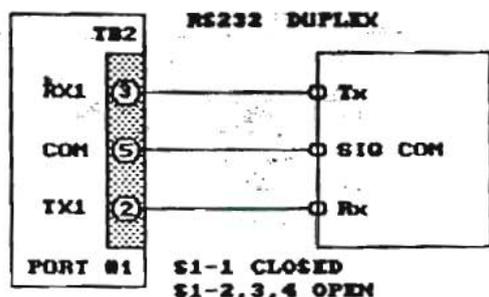
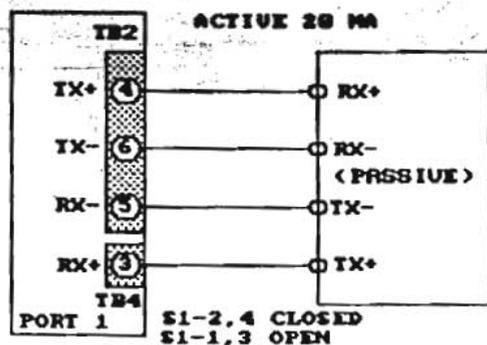
PARAMETER DATA SELECTION	SUBPARAMETER SELECTION	SUBPARAMETER DATA SELECTION	EXPLANATION
NET GROSS	TARE	lb/kg CONV	KEY WHICH AFFECTS ASSOCIATED PARAMETER
14.OFF	N/A	N/A	SERIAL IS DISABLED
14. 51			PORT # 1 - SIMPLEX
	14.1		CONFIGURATION OF "DEMAND" PRINTOUT WHEN IN "NET" MODE
		14.1Gtn	Three-line, "G-T-N" output
		14.1nEt	Single line, NET print
	14.2		DELAY AFTER "CARRIAGE RETURN" ENABLE
		14.2Off	No delay after Carriage Return
		14.2 ON	Delay after Carriage Return
	14.3		PORT # 1 CONFIGURATION
		14.3Off	Port # 1 Disabled
		14.3 Co	Continuous Output
		14.3 dE	Demand Print
	14.4		PORT # 1 BAUD RATE
		14.4 3	300 Baud
		14.4 6	600 Baud
		14.4 12	1 200 Baud
		14.4 24	2 400 Baud
		14.4 48	4 800 Baud
		14.4 96	9 600 Baud
	14.5		PORT # 2 CONFIGURATION
		14.5.Off	Port # 2 Disabled
		14.5 Co	Continuous Output
		14.5 dE	Demand Print

PARAMETER DATA SELECTION	SUBPARAMETER SELECTION	SUBPARAMETER DATA SELECTION	EXPLANATION
NET GROSS	TARE	lb/kg CONV	KEY WHICH AFFECTS ASSOCIATED PARAMETER
14. 51			SIMPLEX CONFIGURATION
	14.6		PORT # 2 BAUD RATE
		14.6 3	300 Baud
		14.6 6	600 Baud
		14.6 12	1 200 Baud
		14.6 24	2 400 Baud
		14.6 48	4 800 Baud
		14.6 96	9 600 Baud
<hr/>			
14. dU			DUPLEX CONFIGURATION
	14.1		Configuration of DEMAMD printout when in NET mode
		14.1Gtn	Three-line, "G-T-N" output
		14.1nEt	Single line, NET print
	14.2		DELAY AFTER "CARRIAGE RETURN" ENABLE
		14.2Off	No delay after Carriage Return
		14.2 ON	Delay after Carriage Return
	14.3		PORT # 1 CONFIGURATION
		14.3Off	Port # 1 Disabled
		14.3 Co	Continuous Output
		14.3 dE	Demand Print
	14.4		PORT # 1 & # 2 BAUD RATE
		14.4 3	300 Baud
		14.4 6	600 Baud
		14.4 12	1 200 Baud
		14.4 24	2 400 Baud
		14.4 48	4 800 Baud
		14.4 96	9 600 Baud

PARAMETER DATA SELECTION	SUBPARAMETER SELECTION	SUBPARAMETER DATA SELECTION	EXPLANATION
NET GROSS	TARE	lb/kg CONV	KEY WHICH AFFECTS ASSOCIATED PARAMETER
14. dU			DUPLEX CONFIGURATION
	14.5		PORT # 2 CONFIGURATION
		14.5.Off	Port # 2 Disabled
		14.5 Co	Continuous Output
		14.5 dE	Demand Print

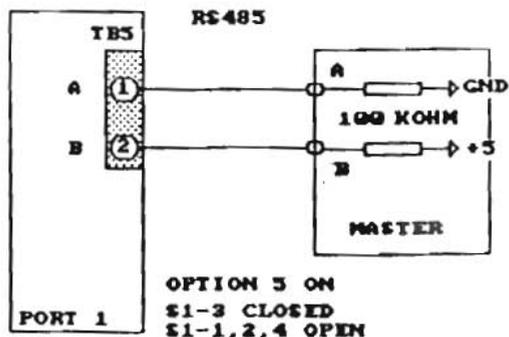
SERIAL PORT # 1 WIRING : CPU KGR8924-1

Serial Port # 1 is a bidirectional ("full duplex") port using RS232C, 20mA active/passive, or RS485(option) transmission. Select the appropriate terminals and set switch S1 accordingly.



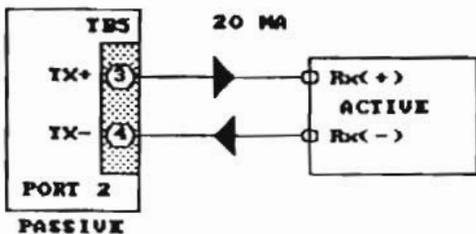
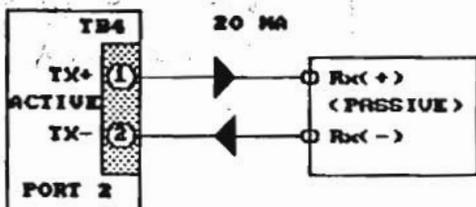
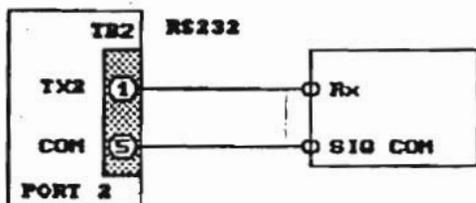
NOTE:

PASSIVE 20 MA REQUIRES OPTION U22 INSTALLED. RS485 REQUIRES U21 INSTALLED.



SERIAL PORT # 2 WIRING : CPU KGR8924-1

Serial Port # 2 is a simplex port using RS232, or 20 mA active/passive.



NOTE: REQUIRES OPTION U15 INSTALLED.

REMOTE SERIAL COMMANDS

The Serial Port # 1 may also be used to remotely control certain indicator functions:

FUNCTION	COMMAND	DESCRIPTION
Zero Scale	<Z> <CR>	Note # 1
Gross Mode	<G> <CR>	Change to Gross
Net Mode	<N> <CR>	Change to Net
Auto Tare	<T> <CR>	Note # 1 & # 2
Print	<P> <CR>	Note # 1 & # 3
Start	 <CR>	Note # 4

Notes:

1. Scale must be out of "motion" or command is ignored, and no "echo" is received. (UNLESS MOTION IS OFF)
2. Sending a "Auto Tare" command puts scale into "net" mode. Command is ignored if disabled in configuration.
3. A remote "Print" command acts as a Data request or in "Truck mode", initiates sequence. (Note: Negative gross weight is inhibited in "Demand" print)
4. A remote "Start" command used in Batch mode of operation.
5. Commands sent to the UMC600 use "CR" as a terminator, while responses from the UMC600 provide "CR/LF". If multiple codes are sent such as: <P> <T> <CR>, the first character is held until a "CR" is received and then acted on. The second will be discarded, if a "LF" is sent following the "CR", it will be saved as the next command awaiting another "CR" before becoming "invalid".
6. Invalid commands are responded to with: <?> <CR> <LF>
7. Valid commands are acted on unless inhibited due to configuration. Command verification can be made with "P" command or monitoring data if in continuous output.

UMC600 "FULL-DUPLEX" SETPOINT PARAMETER ENTRY/RECALL

SETPOINT PARAMETER SE<n> (Entry) SR<n> (Recall)	0	1	2	3	4	5	6
Mode "A"	ALL	SP1	--	--	SP2	--	--
Mode "B"	ALL	SP1	Pr1	--	SP2	Pr2	--
Mode "C"	ALL	SP1	--	dr1	SP2	--	dr2
Mode "D"	ALL	SP1	Pr1	dr1	SP2	Pr2	dr2
Mode "E"	ALL	SP1	Pr1	dr1	--	HI	Lo
Mode "F"	ALL	LOW	--	--	HIGH	--	--
Mode "G"	ALL	SP1	--	--	--	LOW	HIGH

Notes:

1. The Response Data (xxxxxx) will be corrected for "count-by round off and will be six (6) characters if no decimal point and seven (7) with decimal. Leading zeros will be space characters.
2. Invalid Data requests or entries will be responded to with an "echo" of the valid portion and an "I" indicating the invalid portion.

Example Setpoint Recall:

<S> <R> <1> <CR> , Requests value of setpoint 1.

<S> <R> <I> <CR> <LF> , Response if setpoint 1 is OFF.

<S> <R> <1> <(<SP> <SP> <1> <0> <0> <0> <)> <CR> <LF> ,
Response if setpoint 1 = 1000.

Example Setpoint Entry:

<S> <E> <1> <(<1> <0> <0> <c> <)> <CR> , "c" is invalid

<S> <E> <1> <(<I> <)> <CR> <LF> , "echo"

SECTION 8

WEIGH-IN/WEIGH-OUT

The UMC600 "Truck" mode provides a Weigh-in/Weigh-out system for single scale applications. System capacity to one hundred (100) transactions, each with up to six digit Identification Numbers (ID). Transaction printout on port # 2 only and operation in "Gross" mode only.

CONFIGURING THE "TRUCK WEIGHING SYSTEM"

During Digital Configuration, the UMC600 "Truck Weighing System" is configured via Parameter # 13. The installer has the following options:

- A. Turning "On" or "Off" the Truck Weighing System
- B. Providing storage of ID number and tare weight after a transaction, or automatic cancellation of the ID number/tare.
- C. Enable or disable of the "Fixed Tare" entry mode.

Note:

- 1. Operates in gross mode only.
- 2. Output on Port # 2 only.
- 3. Setpoints inoperative.

PARAMETER # 13 - TRUCK WEIGHING MODE SELECTION

PARAMETER DATA SELECTION	SUBPARAMETER SELECTION	SUBPARAMETER DATA SELECTION	EXPLANATION
NET GROSS	TARE	lb/kg CONV	KEY WHICH AFFECTS ASSOCIATED PARAMETER
13 nor	N/A	N/A	Normal weighing mode; Truck Weighing System disabled.
13 tru			Truck Weighing Mode
	13.1		Truck Transaction Disposition
		13.1CA _n	Truck Transaction Cancelled after "Print"
		13.15tr	Truck Transaction Store ID Number and Tare Wt
	13.2		Fixed Tare Entry Select
		13.2 On	Enables fixed tare entry while ID number is being displayed
		13.2 Off	Fixed Tare Entry Disable

FUNCTIONAL OPERATION - "FULL TRUCK IN" MODE

In a "Landfill" operation, (using a common example) the transaction begins with a truck full of refuse ("Gross Weight") entering a landfill, and ends with that same truck leaving empty ("Tare Weight"). The actual transaction happens as follows:

- A. Truck enters scale full. Scale settles out of motion.
- B. Operator inserts ticket and pushes "PRINT" key.
- C. Display responds with "id. no." prompt.
- D. Operator enters truck "ID Number", up to six (6) digits.
- E. Operator pushes "ENT" key.
- F. Printer prints:
 (XXXXXXX) ID. NO.
 (XXXXXXX) LB GR
- G. Truck goes to landfill and empties load.
- H. Empty truck returns to scale and gives ticket to operator. Scale motion ceases.
- J. Operator pushes "PRINT" key and "id no" prompt appears.
- K. Operator enters same ID Number as printed on ticket.
- M. Operator pushes enter key.
- N. Printer prints final transaction:

(XXXXXXX) ID. NO.
(XXXXXXX) LB GR RECALLED
(XXXXXXX) TR
(XXXXXXX) NT

FUNCTIONAL OPERATION - "EMPTY TRUCK IN" MODE

Examples of a "filling" transaction would be at a sand and gravel yard. The empty truck ("Tare Weight") enters the scale, is filled, and then is weighed full ("Gross Weight") on the way out. Here the process is as follows:

- A. Empty truck enters scale. Scale Motion ceases.
- B. Operator inserts ticket and pushes "PRINT" key. "id no" prompt occurs.
- C. Operator enters ID Number, up to six (6) digits.
- D. Operator pushes enter key.
- E. Ticket prints: (xxxxxxx) ID. NO.
 (xxxxxxx) LB GR
- F. Truck exits scale and fills.
- G. Truck reenters scale and operator puts ticket back in printer. Scale motion ceases.
- H. Operator pushes "PRINT" key. "id no" prompt appears.
- J. Operator enters same
 ID Number as on ticket.
- K. Operator pushes enter key.
- L. Ticket prints:

 (xxxxxxx) ID. NO.
 (xxxxxxx) LB GR
 (xxxxxxx) LB TR RECALLED
 (xxxxxxx) LB NT

FUNCTIONAL OPERATION - FIXED TARE MODE

Many truck weighing applications require the entry of a known fixed (manual) tare weight when the truck is on the scale; the advantage of a "fixed tare" function is that the truck need go over the scale only once.

The "Fixed Tare Entry" function operates as follows:

- A. Truck enters scale full. Scale settles out of motion.
- B. Operator inserts ticket and pushes "PRINT" key.
- C. Display responds with " id no " prompt.
- D. Operator enters truck ID number.
- E. RATHER THAN PUSHING "ENT" KEY, OPERATOR PUSHES THE "TARE" KEY.
- F. Display responds with a " tare " prompt, asking for a fixed tare entry.
- G. Operator enters the truck tare weight sequentially via the keyboard.
- H. Operator then pushes the "ENT" key.
- J. Printer prints:

```
(xxxxxx) ID. NO.  
(xxxxxx) LB GR  
(xxxxxx) LB TR KEYED  
(xxxxxx) LB NT
```

TRANSACTION BUFFER : VIEW/PRINT/CLEAR

- "Tare Recall" : Provides "viewing" of entered identification numbers. Each "push" will step to the next ID. When "donE" prompt appears, that is the end of the buffer.
- "Print" : Pushing print with identification displayed will cause output (print) of the whole buffer.
- "Cancel" : Pushing cancel with identification displayed will clear that location. Consecutive cancels until "donE" will clear entire buffer.

FT²

PORTABLE VEHICLE SCALE

GENERAL

The LOADMASTER FT2 Portable Vehicle Scale is simply the standard FT2 with a self contained frame. Installation is a matter of placing on a smooth level surface, piling up stone for approaches and plugging in. That is it! (Note: Concrete footers recommended for any installation over 3 Months)

CONFIGURATION

Standard module lengths are available as well as custom sizes. Each module is completely self supporting with 4 load cells. Modules can be placed end to end (or side by

side) and summed electrically for an unlimited combination of sizes and capacities.

FEATURES

- Only 15½" tall (less than half of most portable vehicle scales)
- Same free floating deck as every other FT2 Motor Truck Scale
- Top access to all Load Cells and Junction Boxes
- Fully concealed and conduited wiring within the structure
- All Junction Boxes are fiberglass with NEMA 4X rating



PART NUMBER	#OF SECTIONS	CAPACITY (Tons)		PLATFORM LENGTH	SHIPPING	
		GROSS	CLC		10' WIDE	11' WIDE
156-3251-x	(2)	40	40	10'	6,300#	6,800#
-3255-x				12'	6,800	7,045
-3252-x				15'	7,900	8,200
-3253-x				17.5'	8,700	8,950
-3254-x				20'	10,050	10,375
156-xxxx-0	Primed and Finish Painted Steel (Standard)					
-xxxx-2	Hot Dip Galvanized (Optional)					
-xxxx-3	2-Part Epoxy Paint Finish (Optional)					
-xxxx-4	11' Wide					

Part Number Example:

156-3252-2 is a 15' x 20', 40 Ton "FT2" Portable Vehicle Scale with Hot Dip Galvanized Finish.

- NOTES:**
1. Custom sizes are available and in most cases carry no additional engineering charges.
 2. Accuracy will be as set forth in NBS Handbook 44. Class III L.
 3. All Loadmaster FT2 products are warranted against manufacturing defects for a period of two (2) years.
 4. Lightning protection kit included.



420 E. Lincoln Street • Findlay, Ohio 45840 • 419/422-4779
Division of: Holtgreven Scale & Electronics Corp.



"a preferred name in load cell technology"

Model 80210

Double Ended Shear Beam Load Cell

FEATURES:

- 20k to 200k pounds capacities
- Low profile design
- Nickel/Chrome plated high alloy tool steel
- Complete environmental protection
- NTEP Certified versions available for Class III L 10,000 divisions
- Factory Mutual (F.M.) Approved †



NTEP C.O.C. #90-083A2

DESCRIPTION:

The Model 80210, a double ended shear beam load cell, is ideally suited for tough environments associated with truck scales. Its construction of high alloy tool steel provides optimum protection under impact loading and adverse conditions. The cell is environmentally protected with two waterproof seals and nickel/chrome plating to assure resistance against corrosion.

PERFORMANCE SPECIFICATIONS

Standard Capacities (lbs.):	20K, 30K, 40K, 50K, 60K, 65K, 75K, 100K, 150K, 200K
Excitation Voltage:	10VDC - Maximum 15VDC
Rated Output:	3.0 mV/V \pm .1%
Non-Linearity:	< 0.03% FSO (Full Scale Output)
Hysteresis:	< 0.02% FSO
Non-Repeatability:	< 0.01% FSO
Zero Balance:	\pm 1.0% FSO
Bridge Resistance:	700 \pm 7.0 ohms
Safe Overload:	150% of Rated Capacity
Side Load Discrimination:	500:1
Temperature:	
Compensated Range:	0 - 150 deg. F
Effect on Output:	< 0.0008% FSO/deg. F
Effect on Zero:	< 0.0011% FSO/deg. F
Finish:	Electroless Nickel/Chrome Plated



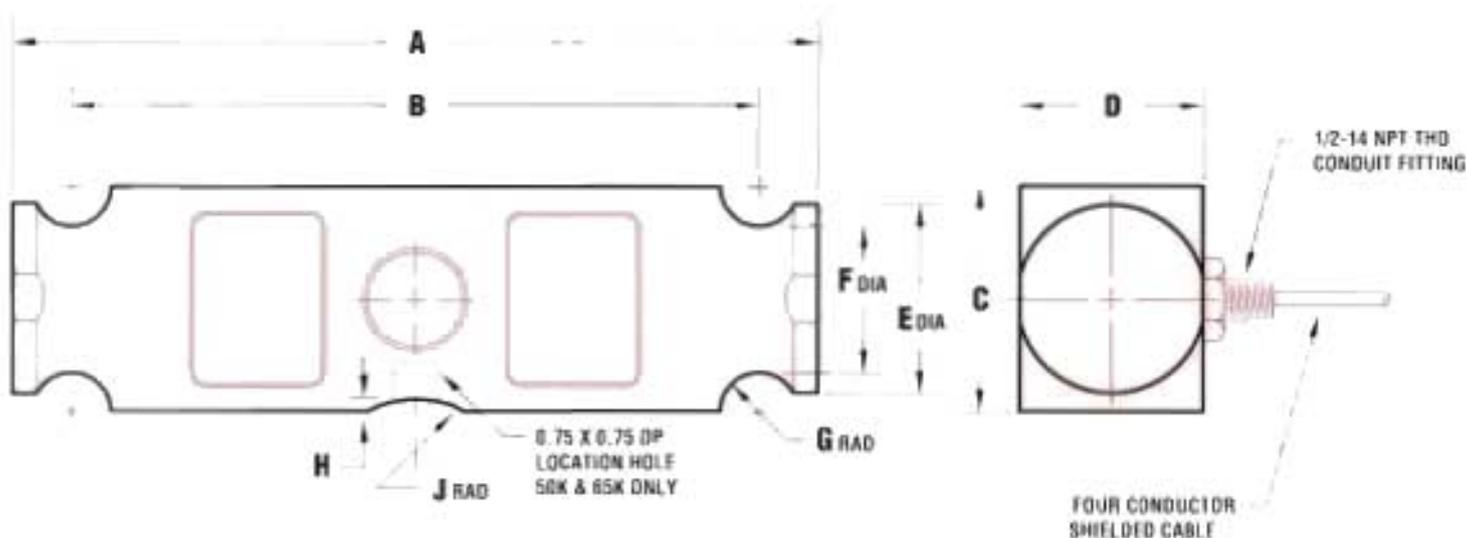
Model 80210



CAPACITY LBS.	A	B	C	D	E	F	G	H	J
20K - 40K	8.25	7.25	2.44	1.94	2.00	1.63	0.50	.25	.50
50K - 150K	10.25	8.50	2.90	2.90	2.40	2.05	1.00	.25	1.00
200K	11.50	10.00	3.40	3.40	2.75	2.35	1.50	.40	1.50

WIRING

- INPLT OUTPUT SHIELD
- RED (+) GREEN (+)
- BLACK (-) WHITE (-)
- COMPRESSION POSITIVE**



* NOTE 20K - 40K 40 FT CABLE, 50K - 200K 60 FT CABLE

† Factory Mutual Systems approved as intrinsically safe when installed per F.M. approved installation drawing. Contact ARTECH sales department for details.

Represented by:



1966 Keats Drive, Riverside, CA 92501

