Kam® Weight Scale

User Manual
WSMANUAL0114

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INTRODUCTION

The KAM® Weight Scale is designed for integration with the KAM® CSS Complete Sampling System and is used to verify sample volume in KAM® SR Sample Receivers per API Chapter 8.2, ASTM 4177 and ISO 3171. Weight Scale units (generally 2) are placed inside a KAM® SRH Sample Receiver Housing, and the KAM® SR Sample Receivers are placed on top of the Weight Scale platforms.

Each Weight Scale unit communicates with the KAM SC Sampler Controller via 4-20 mA. The 4-20 mA signal directly correlates to the current weight of the Sample Receiver and its volumetric equivalent. In this way, operators can remotely monitor for accumulated sample volume, and automatically switch to a second Sample Receiver for continued sample collection once the first receiver is full.

AVAILABLE MODELS

- **0-60 lbs (0-27 KG)** Standard for use with a 3 gallon sample receiver
- **0-100 lbs (0-45 KG)** Standard for use with a 3 or 5 gallon sample receiver
- **0-300 lbs (0-136 KG)** Standard for use with a 5 or 10 gallon sample receiver
MODELS AND SPECIFICATIONS

0-60 lbs (0-27 KG)
Standard for use with a 3 gallon sample receiver

Resolution: .02 lb (9 grams)
Dimensions: 9.25”W x 9.25”D x 1.25”H (235 MM x 235 MM x 32 MM)
Maximum weight: Recommended no more than 66 lbs (30 KG), max overload 90 lbs (41 KG)

0-100 lbs (0-27 KG)
Standard for use with a 3 or 5 gallon sample receiver

Resolution: .02 lb (9 grams) resolution
Dimensions: 16”W x 12”D x 1.25”H (406 MM x 305M M x 32 MM)
Maximum weight: Recommended no more than 110 lbs (50 KG), max overload 150 lbs (68 KG)

FIG. 2-1 Scale Dimensions 0-60/0-100 LB. Model
MODELS AND SPECIFICATIONS Continued

0-300 lbs (0-27 KG)
Standard for use with a 3 or 5 gallon sample receiver

Resolution:  .1 lb (45 grams) resolution
Dimensions:  14"W x 14"D x 1.25"H (406 MM x 305M M x 32 MM)
Maximum weight:  Recommended no more than 330 lbs (50 KG), max overload 450 lbs (68 KG)

FIG. 2-2 Scale Dimensions 0-100 lb. model
MODELS AND SPECIFICATIONS

Continued

FIG. 2-3 Weight Scale Controller Dimensions

ADDITIONAL SPECIFICATIONS

Material: Stainless steel and Aluminum
Supply Voltage: 10–24 VDC
Signal Output: 4–20 mA
Temperature Range: 0–185°F (-18°– 85°C)
Sensitivity: 2 mV/Volts ±10%
Controller Dimensions: 5.1"W x 4.5"D x 6.6"H (130MM x 114MM x 168MM)
Controller Weight: 4 lbs (1.8 KG)
Weight Scale is intrinsically safe. Weight Scale Controller is housed in an explosion-proof enclosure.
INSTALLATION

TYPICAL SAMPLING SYSTEM INSTALLATION

FIG. 3-1

[Diagram showing the flow of a typical sampling system installation, including main process pipeline, air supply, flowmeter, 4-way solenoid valve, sample discharge, KAM IAS isokinetic automatic sampler, 3-way valve, sample receivers 1 and 2, weight scales, heater, field control room, and power source.]
**INSTALLATION CONTINUED**

1. Place Weight Scale(s) in Sample Receiver Housing and adjust feet by screwing them in or out (Fig. 3-2) to ensure that the scale is complete stable and does not rock.

2. Mount Weight Scale Controller(s) within 6’ – 8’ (2 – 2.4 M) of housing.

3. Connect the Scale and the Scale Controller with the supplied 10’ wire using quick connects.

**WARNING:** The KAM Weight Scale has mechanical stops to prevent damage from overweight receivers. HOWEVER, placing receivers above the maximum weight or slamming receivers down onto scale will result in damage to the scale.

**WIRING**

1. Remove cover from Weight Scale Controller by first removing set screw on the bottom of cover (see Fig. 3.3) and then turning cover counter clockwise.

2. Remove LCD display plate by first removing the (3) 4-40 screws. See Fig. 3.4.

3. Life the display plate up for easier access, then disconnect the LCD cable.
INSTALLATION CONTINUED

WIRING continued

4. Insert wiring through either of the ¾" NPT openings. See Fig. 3.5.

5. Connect the 12 or 24V + wire to the "V+" terminal. Then connect the negative wire to the "V-" terminal.

6. Connect 4-20mA output wires to 'Loop+' and 'Loop-'.

7. Reconnect LCD cable going to display plate and secure with (3) 4-40 screws. Fig. 3.5.

8. Power can now be turned on.
OPERATIONS

CONNECTING VIA RS232

If setting such as Range or Calibration need changes, this can be done using the provided serial cable and the RS232 port.

You will need a computer with a serial port or serial port converter and installed WSC software.

1. Follow steps 1-3 on p. 7 of this manual to gain access to the wiring board.
2. Connect the provided RS232 cable (See Fig. 4.1):
   - Red to 232TXD Terminal
   - White to 232RXD Terminal
   - Black to any of the GND Terminals
3. Connect the other end of serial cable to computer serial port or serial port converter.

NOTE: In order to change settings in the controller, user must first select the communications port. While some menu options can be used without first selecting the port, in most cases it is simpler to do so prior to using the software.

4. Open WSC software on computer. The initial screen will display the KAM logo.
5. Go to COMM on the top menu bar and select PARAMETERS.
6. A pop-up window titled "Serial Port Configuration: will appear. See Fig. 4.2.
7. Under "Com port" select the appropriate port for your computer and click OK. You do not need to do anything with the other settings. Pop-up window will disappear.
8. Go back to "COMM" on the menu bar and select OPEN to view data. Screen will appear like Fig. 4.3.
CONTROLLER SOFTWARE MENUS

**File>>Enter Password** - A pop-up window will appear for password entry. Once the password has been correctly entered, additional data and inputs will appear in the main screen. See Fig. 4.4.

**File>>Open Cal File Window** – Allows users to work on saved calibration file or open up a new one. If you have not selected a communication port, you will not be allowed to upload or download a calibration. See Fig. 4-5.

**File>>Unit Software Reset** – Resets the Weight Scale Controller.

**File>>Page Setup** – Allows users to configure page setup for printer output

**File>>Print** – Prints contents of main window

**Comm>> Open** – Opens data window. See Page 9, Step 8.

**Comm>>Close** – Closes data window

**Comm>>Parameters** – Allows user to select and configure serial port. See Page 9, Steps 5-7.

**Comm>>Terminal Window** – Allows user to see all incoming messages from Weight Scale Controller. Also allows user to send text commands to the WSC from the ‘Send’ window. A send history is also provided to ease repetitive tasks. Note: This functionality requires selection of the serial port. See 4-6.
OPERATION CONTINUED

CONTROLLER SOFTWARE MENUS Continued

**Reporting>>Clear PC Logs** – Removes all logs of the transmitted and received messages. As the program captures this data at all times, these files can be large and consume disk space.

**Reporting>>Select Logging Directory** – Allows user to select a directory to save the log files created by the program. The default is “C:\ProgramData\Kam\WSC\LOGS”. See Fig. 4-7.

**Reporting>>Generate Receive log** – Generates a disk file containing the PC time and date, the weight, and the raw ADC counts. The only way to stop generation of this file is to quit the program.

**Quit>>Exit** – Quits program

**Quit>>About** – Shows software name, version, etc.