The

Weight 2K

Precision Electronic

Scale

Operating Instructions

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1. Hardware Operating Instructions

1. **Connecting to the host PC**

   To load the system software for the first time requires a PC terminal with an RS-232 serial connection at 1200 baud, 8 bits, no parity, and the ECM96 debugging software.

2. **Loading the software:**

   First start ECM96 from the directory where the W2K file is located, and reset the microcontroller board if prompted. Then type "load W2K" and press [ENTER]. After the software has downloaded the user should type "go" and press [ENTER]. The Weight 2K Precision Electronic scale is now operating. After a few seconds the LCD screen should display a welcome message and proceed to the main menu. If a PC terminal is already connected to the scale, "*RESET TO LOCAL*" be received by the terminal.

3. **Environmental considerations:**

   The Weight 2K Precision Electronic Scale is a sensitive instrument and as such, special consideration must be given to the environment in which it is used in order to get the rated performance from the unit. The scale should be placed so that it is isolated from vibrations and electronic noise that might interfere with its operation. Room vibrations can be observed as motion of the beam when it has not been disturbed. Electronic noise may be manifested as fluctuations in the weight reading when the pan has not been disturbed or readings that are erroneous when verifying a known weight.

2. Modes of Operation

There are two modes of operation for the "Weight 2K" electronic scale:

1. **Local Mode**:

   User input is from the12-key keypad. Output is displayed on the LCD screen

   The default mode for the system is Local Mode. To return to local mode from remote mode the user should press '*' on the keypad.

2. **Remote Mode:**

   User input is from a PC computer keyboard. Output is displayed on the PC monitor screen.

To enter remote mode, the scale must be attached to a PC terminal using an RS-232 serial connection operating at 1200 baud, 8 bits, no parity. The user should send a '*' character to the scale in order to reset the scale to Remote Mode.

3. User Operating Instruction

Both Local Mode and Remote Mode have the same functionality. Either input source (PC keyboard or keypad) can be used to take control of the scale. Output is restricted to the active mode.

The Main Menu lists the available commands:

1:Weigh
2:Count
3:Calibrate
*:Reset

1:Weigh

Press '1' from the Main menu to use the Weigh Function. The Weigh Function measures the current load in the scale's pan and displays the calculated weight on the current display according to the last calibration.

Weight will be continuously updated and displayed at a rate of about two times per second. Resolution is to 0.1 gram with proper isolation of the scale from vibration and noise. The Weigh mode features a Tare function that can be used by pressing '0'. The Tare function defines the current weight in the pan as “zero weight”. For best results the user should wait for the weight reading to stabilize from vibration and fluctuation before using Tare.

Exiting weigh mode can be done by pressing '#' or [ENTER] to return to the Main Menu or the user may press the command number of any of the menu items to go to that command. Pressing '*' will reset the system.

2:Count

Press '2' from the Main Menu to use the Count Function. The Count Function has a submenu with two choices:

1:New Quantity Factor.

Press '1' to calculate a new quantity conversion factor. The user should type the quantity of items currently present on the scale and press either '#' or [ENTER]. If zero is entered, the conversion factor is not changed and the command exits to the Main Menu. If an incorrect number is typed, the

quantity can be cleared by pressing '*' before the quantity is entered. Note: if only '*' is pressed, the system will be reset. For best results, use the Weigh function to determine that the measurement has stabilized before proceeding to New Quantity Factor. Upon completion this command proceeds directly to the Count Quantity mode.

2:Count Quantity.

Press '2' to calculate the quantity of items present on the scale. The Count Quantity mode continuously calculates and displays counted values based on the current conversion factor. This factor is stored until a new factor is calculated using the New Quantity Factor command. One can go to New Quantity Factor mode by pressing '1'. One can return to the Main Menu by pressing '#' or [ENTER].

3:Calibrate

Press '3' at the Main Menu to use the Calibrate Function. Calibration is necessary in order to get accurate readings from the scale. Two calibration weights are required: 500g and 1000g. once calibration mode has been entered, the user is prompted to remove any objects from the scale. When the display stops fluctuating, press '#' or [ENTER]. The scale will now prompt for the 500g weight. Similarly press '#' or [ENTER] when the reading is stable. The scale will now prompt for the 1000g weight. Press '#' or [ENTER] when the reading is stable. The scale will calculate the correct coefficients to provide accurate readings and go directly to Weigh mode.

Note: to cancel calibration without changing the coefficients it is necessary to press Reset ('*') before the third reading is entered. After the third reading is entered the new coefficients will be used. If a mistake is made the scale must be re-calibrated or powered off and restarted.

*:Reset

Press '*' to use the Reset Function. A Reset can be sent from either input mode at any time. The device sending the reset command will receive control of the scale. Calibration coefficients, conversion factors and tare values are preserved when changing between Local Mode and Remote Mode.

4. References

If any problem exists the following references may be helpful in troubleshooting hardware and software problems:

1) “EV80C196KB Microcontroller Evaluation Board USER’S MANUAL”, Release 001 February 20, 1989
2) “8x196KC/KD User’s Manual” Intel 1992
3) The “Weight 2K” Precision Electronic Scale Group 2