

# Autobalance Control Unit

## User manual

The new control unit of the autobalance has improved in both size and user interface giving the user a clear perspective on weighing samples and handling sample data.

On startup the display shows the live weight. Because of the high precision, any noise added to the signal will disturb a clear weighing value. This noise is being filtered off and because of the filter's recursive algorithm it needs to build up for a couple of seconds at startup.

### Display information

All the information on weights, stored weight etc. is shown on the display.



The display consists of 2 windows

#### Main window

This window holds the live weight and serves as an editor when working in a selected menu.

#### Info window

This window holds the information on selected parameters and menu items

## Keypad

In response to pressing a key, a short beep sounds. When pressing a non-authorized key a double beep will sound.

Different menu are accessible by repetitive pressing the selected menu item button. In this manual all different items are mentioned in the same order as handled by the instrument.

## Autobalance file system

To allow separate users to create their own distinct environment and to store sample information, the autobalance comes with a filing system for storing sample weight, range, min-max values and factor information.

Five (1 to 5) different files can be selected with a capacity of a 1000 (0 to 999) samples per file. Each file can hold its own factor, min-max value and range selection. Selecting or entering a file causes the autobalance to adjust itself to the parameters stored in the file.

In default mode there is an unassigned file (file 0) with a capacity of a 1000 (0 to 999) samples. This file also holds its own factor, min-max value and range selection.

When working in an assigned file, the file number is shown at the right bottom side of the display.

Changing from one file to another causes the various parameters to take on the values corresponding to the selected file.

When the power is turned off, only the assigned files (1 to 5) are stored in nonvolatile memory.

**Tare**

Provides electrical tare up to full range.

When operated from within a menu, this button can be used to return to live weight.

**Range**

Selects the desired weighing range (which is displayed in the info window). Autorange is included, for which the correct weighing range is automatically selected and the decimal point correctly positioned. Attempting to weight beyond the capacity of the selected range causes the display to flash "OL" (overload).

Range values that can be selected are:

- 1 mg
- 10 mg
- 100 mg
- 1000 mg
- Auto range

The capacity is defined as RANGE + 20%, including any tared value.

**Calib**

Depressing the *calib* button opens the calibration menu. This menu will tell you what to do and guides you through the whole calibration procedure. On calibration the instrument's offset and calibration factor are determined, while at the end of the procedure, these values are programmed into the instrument's nonvolatile memory. At startup, the most recently programmed values are loaded and used.

It is recommended that the autobalance be recalibrated each time power is turned ON.

**Enter**

Powers up the instrument when pressed once. Holding the *enter* button for 5 seconds causes the instrument to power down.

The present live weight value can be stored in the next vacant sample location by pressing *enter* once in idle mode. A short signal will sound in response and the display value will blink once. When working in an assigned file, the duration of the sound will be longer, as an indication that the values are stored in nonvolatile memory.

**Delta**

Used to calculate the difference between live weight and the previously stored weight.

Used to calculate the difference between live weight and a stored sample value when working in an assigned file. The samples memory id can be entered with the numerical keypad. Use *enter* to validate.

Used to set the upper and lower (min-max) weight limits for quality control applications. The limits can be entered with the numerical keypad. Use *enter* to validate. When weighing limits are set, the min-max field in the info windows will indicate if a measured value is within range ([ ]) or if it is too low (<<) or too high (>>). Resetting both values to 0 causes the min-max field to be disabled.

**Factor**

Used to enter an additive or multiplicative factor to be applied to a live weight value.

Depress *factor* to enter the menu.

Depressing the factor key again toggles the operator. Use the *enter* key to invalidate the choice. The operand can be entered using the numerical keypad.

When a factor is applied, this will be shown by the factor field in the info window.

Clear the factor by entering 0 in the operand field.

**Sample**

Used to select an assigned- (1 to 5) or the unassigned memory file (0).

All file specific data is shown in the main window. The file field blinks, indicating that a specific file can be selected using the numerical keypad. Use *enter* to validate. After validation the screen will freeze due to memory actions. After 5 seconds the idle screen will appear, displaying the selected file in the file field.

Used to replace a sample in memory.

Use the numerical keypad to enter the sample location and validate with the *enter* key.

If no sample is stored, this menu item is skipped.

Used to recall samples from memory.

Use the numerical keypad to enter the sample location and validate with the *enter* key. After 5 seconds the sample location starts to blink again, enabling the recall of other samples.

Used to clear all file data.

The user is given the opportunity to clear all specific file data. Use *enter* to validate and once more if you are sure.

### **Stat**

Used to perform statistical analysis on the samples in the selected file.

Depress the *stat* key ones to calculate the standard deviation

Depress the *stat* key twice to calculate the coefficient of variation

Depress the *stat* key three times to calculate the mean value

Depress the *stat* key four times to display the number of samples stored

Depress the *stat* key five times to calculate the standard error

Depress the *stat* key six times to calculate the median