Compu-Weigh Pty Ltd.

Instruction Booklet

for

Installation of

Computer System

I n d e x

1. General Description

The **Compu-Weigh** Concrete Batching System is a personal computer based controller that uses plug in input/output cards and ribbons to directly control solid state output relays and optically coupled inputs.

The System does not use electro-mechanical relays.

A removable hard disk is installed at the time of commissioning, although a floppy disk installation procedure can be provided to allow the testing of all output and input relays.

2. Mounting Holes

There are no mounting holes in the enclosure as invariably these will be in the wrong position to suit the installation.

The Installer, therefore, has to drill either two or four holes, keeping in mind the position of the control panel inside the enclosure. Mark the holes on the back of the enclosure and drill through from the back. Do not use compressed air to blow out the cabinet instead use a small vacuum cleaner to vacuum the drilled particles out.

3. External Wiring

There are two types of external wiring:

1. 240V control output lines, and
2. Low Voltage Signal/Load Cell Cabling.

240V Wiring control outputs are all available at the terminal strip in the bottom of the enclosure. Using multi-core cable, these terminals should be wired to the appropriate contactor coils in the concrete plants' switchboard.

The 240V used to control these outputs must also be provided from the switchboard together with a neutral. Preferably these 240V have a control fuse in the switchboard so when this is blown or removed, the computer cannot switch on external loads nor can the front panel pushbuttons be used.

A 240V GPO (weatherproof) will need to be provided near the remote display position. It is preferred that this is powered from the same control voltage provided to the enclosure so that if the auto/manual switch is turned to the off position, the remote display will be powered down as well.

Low Voltage Wiring
Load Cell Wiring has to be soldered on to a 9 pin female socket. The wiring format used is the same as for the Gedge Indicators. This can be found in the rear of this booklet with the circuit diagrams.
Glands are provided to bring this cable through, however, leave enough cable inside the enclosure to allow it to be plugged into the computer or the Gedge on the door.

Note: Screen wire should only be connected at the enclosure end and should not be earthed at the load cell end.

3. External Wiring (Cont)

Pulse Wiring for the Manu Meters should be brought to the Manu Meters and wired directly into the terminal block provided, taking care with the wires already in the terminal block going to the enclosure.

Remote Display RS232 wiring requires a 4 core screened cable from the 4 pin plug provided on the display to the separate terminals provided. This plug will already be connected using a 2 metre lead for testing purposes.

4. Testing - Pushbuttons

The terminals provided in the bottom of the enclosure have the output relays from the computer and the pushbuttons connected to them. This means that either the computer or the manual pushbuttons can activate this output line.

Some of the pushbuttons are only available in the auto mode although all of the pushbuttons are available in the manual mode.

Power for the Gedge Indicators is not available in the auto mode.

The enclosure provided will already have been tested to the output terminals, however testing needs to be done to confirm that when the button or switch is activated, the external device responds.

5. Testing - Manu Meters

When the computer is turned off, and the Manu Meter turned on, water or additives can be initiated in the normal manner. That is, a target can be set on the Manu Meter, the reset or start button pressed and if the pulser has been wired corrrectly, the Manu Meter will increment towards its target setting.

With the water Manu Meter, the normal or chilled water switch may select one or two pumps.

6. Testing - Load Cells

Connect a DB9 Socket to the appropriate Gedge Indicator and turning the auto/manual switch to manual, should see the Gedge Indicator power up.

If the Gedge Indicators have been previously calibrated then there should be no change in calibration as a result of the additional wiring installed (unless excessive number of metres installed).

If the Gedge has been removed from a different location then start by doing a calibrated zero in the old position, connected to the original plugs. Then fill using a single aggregate a known quantity into the aggregate weigh hopper.

Now moving the Gedge Indicator to its new location (**Compu-Weigh** enclosure) and powering up should result in a weight display of the same (or within a couple of kilos) as that shown at the old location.

If there is a significant difference, then there is either a wiring fault or recalibration has to take place.

7. Testing - P.C.

For contractors whom regularly install **Compu-Weigh** Systems, a floppy disk is provided to allow the testing of all inputs and outputs to the P.C.

Place the floppy disk in the disk drive and turn on the P.C. power. The steps required to use this utility will be self-explanatory from the screens provided.

8. Wiring Diagram

See Attached Wiring Diagram.

9. Calibration

a) Zero Hoppers

i) Aggregate Hoppers

Alt. F12 zeroes the Aggregate Bin temporarily whilst you remain in the Batching Program. The zero from the file will be re-used next time you enter the Batching Progam.

This option is useful when hang-up in the hoppers will not dislodge.

ii) Cement Hoppers

The Cement Hopper can only be zeroed using a password, which is entered at the entry into the Batch Program.

The F3 function will now show Zero.
Press F3 and answer the Bin Nr. Request as 1 for Aggregate and 2 for Cement.

Zerocount1 and Zerocount2 will display on the screen and should be recorded manually.

9. Calibration (Cont).

b) Spanning Hoppers

i) Aggregate Hopper

Spanning of the hoppers should only be done by a qualified/ certified Scale Company. Spanning requires a different password to zeroing. The procedure below is for the Scale Company performing the test.

A: Empty the hopper by vibration and open the discharge gate by manual pushbutton.
B: Attach chains and zero-load items such as Block & Tackles & Hooks.
C: Zero the Scale using Zeroing Password at the entry into the Batching Program.
D: Press Alt.F1 to enter weight watch mode. (The remote display should now show zero (depending on the wind), 05 indicates -5kg, 5 indicates +5kg, which is echoed on the screen.
E: Connect the loadcell plug to the Gedge and calibrate zero. Reconnect to computer.
F: Lift calibrated load onto the scale and read from the screen or remote the actual kilo's read by the computer.

If the error is beyond Tolerance, then Quit out of the Batching Program and re-enter using the Spanning Password. Press F4 to Span and Type 1 for Aggregate or 2 for Cement and Enter.
The computer will now request the actual kilo's of test weights. Type in the value in kilo's and press Enter. At this point, the Span is displayed on the screen.

9. Calibration (Cont)

b) Spanning Hoppers (Cont)

i) Aggregate Hopper (Cont)

The display shows: Zerocount (from 0 to 40,000)
Spancount (the counts of change)
Cnt/Kilo (the counts per kilo)
Span Wt (kilo's of span wt)

G: Follow your usual procedure for adding material to get to the capacity of the Scale. At each point, swap cables to the Gedge.

H: If you wish to correct any errors, then the spanning procedure can be redone with the capacity on the scale and typing in a kilo value that will correct the slow or fast error.

ii) Cement Hopper

This procedure is the same as the Aggregate except that there is no remote display and the Bin Nr. is 2.

9. Calibration (Cont)

c) A to D Boards

Requirements: **Digital Multimeter**
Test Weights
Certified Scale Company

i) Description:

The A to D board provides +5 and -5V excitation to the loadcells and amplifies the mV return based on dip switch settings and micro gain pot.

The amplified voltage is available on 2 terminals next to the loadcell terminals and are marked +-. This amplified signal should be close to +1.900 Volt when the bin is empty and can get close to -1.900 Volt when at capacity.

In either case, the limit is from +2V to -2V which represents 40,000 counts.

The dip switches should both be set the same. All switches are off except for 1. This could be any of the 8 switches.

Generally, the Aggregate hopper requires Sw 2 on and the Cement Sw 3 on.

9. Calibration (Cont)

c) A to D Boards (Cont)

ii) Initial Coarse Calibration

With the bin empty, set the Dip Switches to say 2 on for the Aggregate and 3 on for the Cement.

Connect multimeter to +- terminals and adjust the zero pot (near loadcell terminals), until a voltage of 1.85 approx. Remove the multimeter and use the zero function to zero the scale.

Take note of the zerocount. Although the multimeter may have read 1.85 Volts, the zerocount displayed may not read the equivalent (38,500) as the multimeter creates a load that will affect the count. This is why the meter needs to be removed during zeroing and spanning.

Next, place a known load on the scale and use the span function to get the cnts/kilo. If, for example, the zerocount was 38580 and the cnts/kilo 3.512, then to calculate the capacity of the scale with the current settings, divide 38580 by 3.512, which is 10985kg, which is too low for say a 12 tonne hopper.

To correct the problem, set a lower switch on (ie go from 3 to 2) and repeat the procedure until the capacity is reached or exceeded.

iii) Final Fine Calibration

With the dip switches set, you can make further gain adjustments using the span pot

Follow the span procedure in 11 (i) to span finally.

Loadcell Cable Connections

Pin	Connection
1	- Signal
2	+ Signal
3	+ Excitation
4	- Excitation
5	N/C
6	Shield
7	Ground
8	N/C
9	Shield