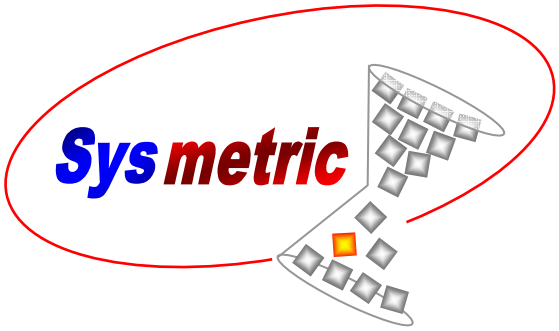
# Weighing Amplifier

# and

# Loadcell Unit




## INSTALLATION MANUAL

Manual Number: WAL101

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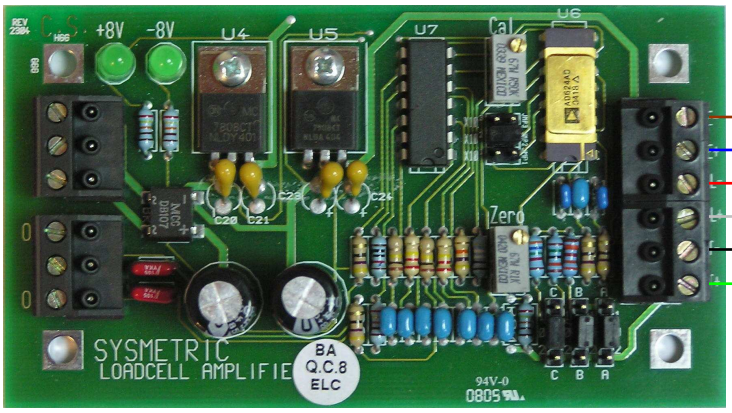
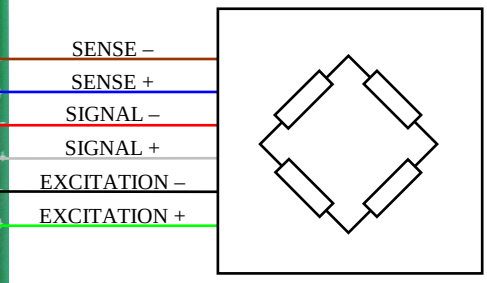
# 1. Electrical Wiring

## *1.1. Loadcell*

The following scheme shows the electrical wiring between the weighing amplifier and the loadcell unit. 6 wires should be connected from the loadcell to the input terminals of the weighing amplifier.




***Weighing Amplifier***

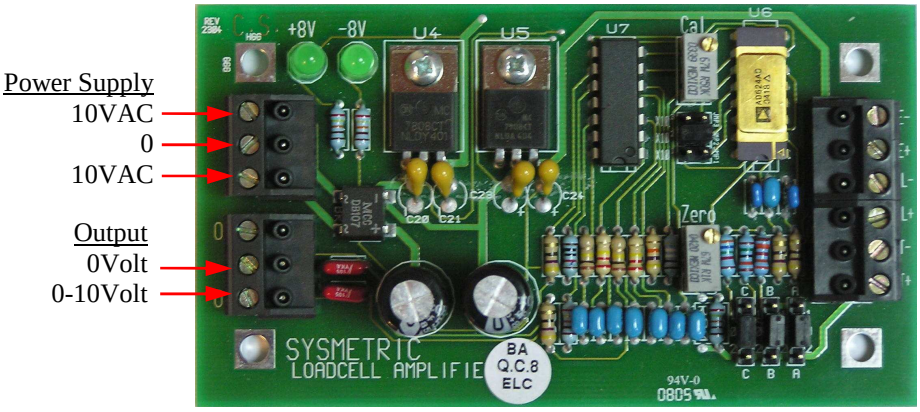



***Loadcell***

Note:
Different loadcells comes with different wires colors. Check the function of each wire in the loadcell's manual and connect it to the weighing amplifier accordingly.

## *1.2. Power and Output*

The following scheme shows the power supply wiring (2x10VAC) and the amplifier's output wiring (0-10VDC).

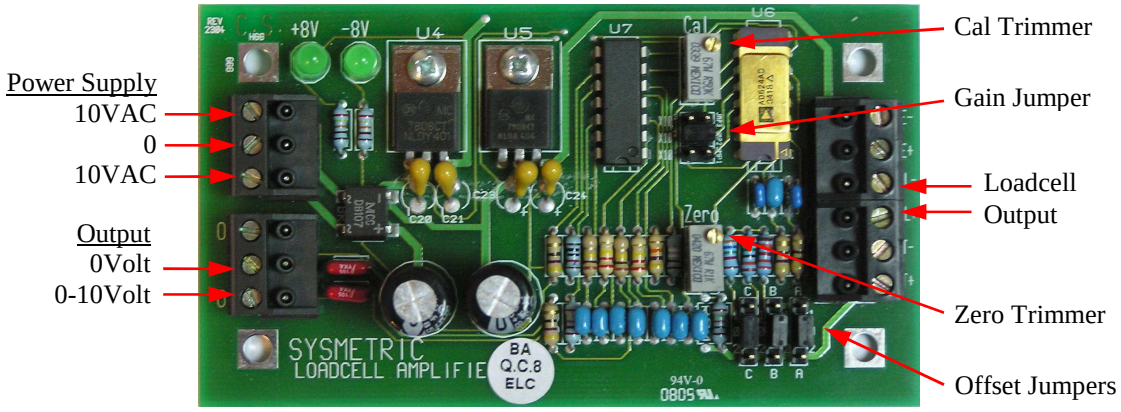



***Weighing Amplifier***

# 2. Amplifier Calibration

The following procedure describes how to calibrate the weighing amplifier in order to receive correct output voltages:

1. Verify that the two green LEDs (+8V and -8V) are lit. If not check the power supply voltage on the power pins. There should be two 10VAC supplies. If not, check the supply transformer and its fuse.
2. Verify the gain jumper position (see table below).
3. Verify the offset jumpers (A, B, C) are at the center position marked 0.
4. Turn *Zero* trimmer 20 turns left, counterclockwise.
5. Turn *Cal* trimmer 20 turns left, counterclockwise.
6. Using a voltmeter, read the voltage on the output pins of the weighing amplifier and turn the *Zero* trimmer right, clockwise, until the voltage reads 0±0.1Volt. If you can not get 0Volt at this stage see the next chapter for checking the loadcell output and adjusting the offset jumpers.
7. Place a reference weight on the loadcell and turn *Cal* trimmer clockwise until you receive the correct voltage at the output pins. See table below for reference weights and correct output voltages.




**Weighing Amplifier**

The following table specifies recommended calibrations for Sysmetric's systems:

| System | Gain Jumper Position | Reference Weight | Output Voltage |
|---|---|---|---|
| **SMART** | Center – $10^2$ | 0.200kg | 3.00Volt |
| **CD100** | Bottom – $10^1$ | 1.000kg | 2.4Volt |
| **CD400** | Bottom – $10^1$ | 4.000kg | 2Volt |
| **CD800** | Bottom – $10^1$ | 8.000kg | 1Volt |
| **CD800HD200/400** | Bottom – $10^1$ | 8.000kg | 0.3Volt |

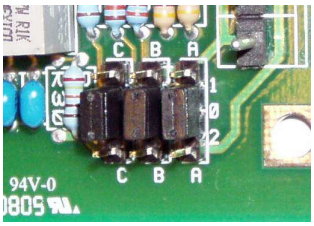
# 3. Offset Compensation

Normal loadcell output with no load on it is about ±1-2mVolt. When the loadcell is damaged it usually has some offset and will output a higher voltage. This will disturb calibrating the weighing amplifier.

If during amplifier calibration it is impossible to get 0Volt when trying to calibrate the zero, check the loadcell output voltage on the *loadcell output* pins. If the voltage is more then the normal ±2mVolt, it is recommended to replace the loadcell unit. Another option, instead of replacing the loadcell unit, is to use the offset jumpers to compensate the loadcell's offset.

The offset jumpers affect the voltage in different intensities: jumper A is the least influencing while jumper C is the most. Each jumper can be in one of three positions: top – 1, middle – 0 and bottom – 2. There are a total of 27 adjustment levels, detailed in the next table:

| Voltage decrease ← | | | | | | | | | | | | | | Voltage increase → | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | A |
| 2 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | B |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | C |




**Offset Jumpers**

Note: in any case it is recommended to replace the damage loadcell instead of using the offset jumpers. If the offset jumpers are used to compensate offset the loadcell should be tested carefully to ensure correct weight measurement.

# 4. Loadcell Test

The loadcell test is preformed in order to ensure the accuracy of the system and that correct weight is reported from the weighing bucket. The loadcell test has three checks:

1. Hysterasis check (repeatability) – ensures no friction disturbs the loadcell and the weighing bucket.
2. Calibration check – ensures correct ratio between the loadcell voltage output and the weight reported by the system.
3. Linearity check – ensure the linearity of the loadcell.

Loadcell test procedure:

1. Check that when the loadcell has no load the output voltage from the amplifier is 0±0.1Volt.
2. Hysterasis check (repeatability) – gently press the loadcell and release. The output voltage of the amplifier should rise and drop back to zero. Gently pull the loadcell. The output voltage of the amplifier should drop below zero and rise back to zero. If the voltage does not return to zero then the loadcell is damaged.
3. Calibration check – place a reference weight on the loadcell and check that the amplifier outputs the correct voltage. If not, calibrate the amplifier as described in chapter 3.
4. Linearity check – put weight, different then the reference weight, on the loadcell and verify that the amplifier outputs correct voltage according to the calibration. For example, if the amplifier was calibrated with a reference weight of 1.00kg to give 1.00Volt at the output, put a 2.00kg weight on the loadcell and check that the amplifier outputs 2.00Volt.

# 5. Mechanical Dimensions