Classifying Load cells - Zemic

Current Calibration and classifying A, B, C and D current groups.

Zemic provides load cells with rationalized output current; Current Calibration (SC-Option). Current Calibration makes external balancing resistors unnecessary; allows much quicker on-site set up and calibration; and enables load cells to be replaced in the field without any need to re-adjust the system.

Current calibrated load cells are rationalized in terms of current output, rather than in terms of voltage output. During production of load cell "LCx", the output resistance "Rx" is measured. The desired output is then calculated by:

$$Ux = Iref * Rx$$

After this calculation the required value for "Ux" is obtained by means of the internal calibration resistors to an accuracy of ± 0,05%, resulting in identical output current tolerances for each load cell.

Example, the following four current calibrated load cells are connected in parallel and supplied with an excitation voltage of 10 Vdc:

LC	Capacity	Rated Output (mV/V)	Output (mV)	R_{out}(Ω)	Current (mA)
1	1000	1.9943	19.943	350.50	0.0569
2	1000	2.0029	20.029	352.00	0.0569
3	1000	2.0000	20.000	351.50	0.0569
4	1000	1.9972	19.972	351.00	0.0569
Total	4000	1.9986	19.986	87.81	0.2276

The total output can be calculated by multiplying the total current with the combined resistance; $U = It * Rt = 0.2276 * 87.81 = 19.986\,mV$. The total output when applying a test load of 500kg on each individual load cell will be:

Load applied on LC 1 – 2 – 3 – 4	Total Current I_t	Total Output U_o	Reading M
500 – 0 – 0 – 0	0.028450	2.4982	499.99
0 – 500 – 0 – 0	0.028450	2.4982	499.99
0 – 0 – 500 – 0	0.028450	2.4982	499.99
0 – 0 – 0 – 500	0.028450	2.4982	499.99

The above calculations show clearly that the system needs **NO** further "corner" adjustment to be accurate.

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Classifying Load cells - Zemic

Classifying A, B, C and D column and single shear beam load cell

ZEMIC is selecting the output current in 4 groups A,B,C and D in order to get even closer matched load cells. In normal applications this is not needed but there were more than 6 load cells are connected this selection helps in cornering the system.

The following selection criteria:

B8D、BM8D、H8C（suffix SC）：
CLASSIFICATION A：0.008539 ≤ SC < 0.008543；CLASSIFICATION B：0.008543 ≤ SC < 0.008547；
CLASSIFICATION C：0.008547 ≤ SC < 0.008551；CLASSIFICATION D：0.008551 ≤ SC < 0.008555。

BM8G、BM8D（suffix SC）：
CLASSIFICATION A：0.005693 ≤ SC < 0.005696；CLASSIFICATION B：0.005696 ≤ SC < 0.005699；
CLASSIFICATION C：0.005699 ≤ SC < 0.005702；CLASSIFICATION D：0.005702 ≤ SC < 0.005703。

BM8H（suffix A1）：
CLASSIFICATION A：0.001998 ≤ SC < 0.001999；CLASSIFICATION B：0.001999 ≤ SC < 0.002000；
CLASSIFICATION C：0.002000 ≤ SC < 0.002001；CLASSIFICATION D：0.002001 ≤ SC < 0.002002。

BM14G4、BM14C：
CLASSIFICATION A：0.002841 ≤ SC < 0.002843；CLASSIFICATION B：0.002843 ≤ SC < 0.002845；
CLASSIFICATION C：0.002845 ≤ SC < 0.002847；CLASSIFICATION D：0.002847 ≤ SC < 0.002849。

BM14A：
CLASSIFICATION A：0.004146 ≤ SC < 0.004148；CLASSIFICATION B：0.004148 ≤ SC < 0.004150；
CLASSIFICATION C：0.004150 ≤ SC < 0.004152；CLASSIFICATION D：0.004152 ≤ SC < 0.004154。

The classification labels A, B, C or D are labelled on the load cell box.