



NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:

Load Cell
Type-S Tension
Model: RL20001, RL20001A and RL20001I
 n_{max} : 5 000, Single/Multiple Cell Class III
 n_{max} : 10 000, Single/Multiple Cell, Class III L
Capacity: 25 to 30 000 lb
Accuracy Class: III / III L

Submitted By:

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Standard Features and Options

*The specific capacities covered by this Certificate are listed on page 2.

Example model designations: RL20001-X X-YY, RL20001A-X-X-YY and RL20001I-X-X-YY, where:


Load Cell Capacity
Divisions (in units of 1000)
N = Class III
T = Class III L

- 4-wire design

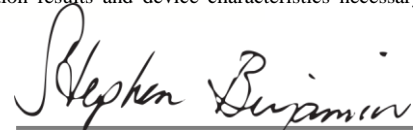
Nominal Output:

3 mV/V

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of "NIST Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.



Craig VanBuren
Chairman, NCWM, Inc.



Stephen Benjamin
Committee Chair, NTEP Committee
Issued: September 25, 2019

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Rice Lake Weighing Systems
Load Cell / RL20001, RL20001A and RL20001I

Load Cell Parameters:

| Capacity (lb) | Vmin (lb) | | Minimum Dead Load (lb) |
|---------------|-----------|-------------|------------------------|
| | Class III | Class III L | |
| 25 | .003 | .001 | 0.5 |
| 50 | .005 | .002 | 1.0 |
| 75 | .007 | .003 | 1.5 |
| 100 | .009 | .004 | 2.0 |
| 150 | .015 | .006 | 3.0 |
| 200 | .018 | .008 | 4.0 |
| 250 | .023 | .010 | 5.0 |
| 300 | .027 | .012 | 6.0 |
| 500 | .050 | .020 | 10.0 |
| 750 | .070 | .030 | 15.0 |
| 1000 | .090 | .040 | 20.0 |
| 1500 | .140 | .060 | 30.0 |
| 2000 | .180 | .080 | 40.0 |
| 2500 | .230 | .100 | 50.0 |
| 3000 | .270 | .120 | 60.0 |
| 5000 | .450 | .200 | 100.0 |
| 7500 | .680 | .300 | 150.0 |
| 10 000 | .900 | .400 | 200.0 |
| 15 000 | 1.350 | .600 | 300.0 |
| 20 000 | 1.800 | .800 | 400.0 |
| 25 000 | 2.250 | 1.00 | 500.0 |
| 30 000 | 2.700 | 1.20 | 600.0 |

Application: The load cells may be used in both Class III and III L scales for single and multiple load cell applications consistent with the model designations, number of scale divisions, and parameters specified in this certificate. Load cells of a given accuracy class may be used in applications with lower accuracy class requirements provided the number of scale divisions, the v_{min} values, and temperature range are suitable for the application. The manufacturer may market load cells with fewer scale divisions (n_{max}) and with larger v_{min} values than those listed on the certificate. However, the load cells must be marked with the appropriate n_{max} and v_{min} for which the load cell may be used.

Test Conditions: This certificate supersedes Certificate of Conformance 91-049A1 and is issued to make a correction in the For: box changing Single Cell to Single/Multiple Cell to be consistent with application. Changes were also made to update the contact information. Corrected a typographical error in CC 91-046 Test Conditions to reflect correct CC. No additional testing was deemed necessary. Previous test conditions are listed below for reference.

Certificate of Conformance Number 91-046A1: This Certificate supersedes Certificate of Conformance Number 91-046 and is issued to recognize a change to the model designation by adding the model RL20001I. No other changes have been made to the device, so no additional testing was required. Previous test conditions are listed below as reference.

Certificate of Conformance Number 91-046: This certificate supersedes Certificate of Conformance No. 91-046PA1 and is issued to upgrade the status of the RL20001-XX-YY Series load cells from provisional to full. The RL20001A-XX-YY load cells had been previously added to Certificate of Conformance No. 91-046PA1 with full status. The latest test conditions are listed below.

Two 500 lb and two 10 000 lb capacity load cells were tested using dead weights as the reference standard. The data were analyzed for single load cell applications. The load cells were tested at an excitation voltage of 10 V dc. The cells were tested over a temperature range of -10 to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure.



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Representatives from the National Institute of Standards and Technology analyzed the data. The results indicate that the load cells comply with the applicable requirements of NIST Handbook 44.

Certificate of Conformance Number 91-046PA1: This certificate supersedes Certificate of Conformance Number 91-046P and is issued to add the RL20001A-XX-YY Series load cells. The RL20001A-XX-YY Series load cells are metrologically and physically identical to the RL20001-XX-YY Series load cells. The latest test conditions and the test conditions from the previous certificate are listed below.

Two 100 lb, two 1000 lb and two 15 000 lb capacity load cells were tested using dead weights as the reference standard. The excitation voltage was 10 V dc. The data were analyzed for single load cell applications. The cells were tested over a temperature range of -10 to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure. The manufacturer's laboratory was used to collect the test data.

Representatives from the National Institute of Standards and Technology evaluated the manufacturer's test facility, an NTEP representative, Steve Cook, witnessed repeat tests on the load cells, and NIST analyzed the data. The results of these evaluations indicate that the load cells comply with the applicable requirements of NIST Handbook 44.

Certificate of Conformance Number 91-046P: Two 1 000 lb and two 10 000 lb capacity load cells were tested using dead weights as the reference standard. The data were analyzed for single load cell applications. The load cells were tested at an excitation voltage of 10 V dc with dead weights in tension. The cells were tested over a temperature range of -10 to 40 °C. Three tests were run on each cell at each temperature. The temperature effect on zero was measured and a time dependence (creep) test was performed. The barometric pressure test was waived due to the insensitivity of the load cell design to changes in barometric pressure. The manufacturer's laboratory was used to collect the test data.

Evaluated By: NIST Force Group, NIST Office of Weights and Measures, 91-046; M. Manheim (NCWM) 91-046A2

Type Evaluation Criteria Used: *NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, 1992 Edition. *NCWM Publication 14 Measuring Devices*, 1992 Edition.

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Information Reviewed By: R. Whipple (NIST) 91-046; J. Truex (NCWM) 91-046A1; D. Flocken (NCWM) 91-046A2

Example(s) of Device:

