



**JCSS**  
JCSS 0107

Sample

**A&D**

|                |         |
|----------------|---------|
| Certificate No | *****-* |
|----------------|---------|

## Calibration Certificate

|                                   |  |
|-----------------------------------|--|
| Name of Customer                  | A&D Company Limited  |
| Address of Customer               | 1-243 ASAHI KITAMOTO-SHI SAITAMA-KEN<br>364-8585, JAPAN  |
| Location of Calibration Performed | 1-243 ASAHI KITAMOTO-SHI SAITAMA-KEN<br>364-8585, JAPAN<br>A&D Company Limited<br>First Floor Laboratory |
| Calibration Item                  | Uniaxial Testing Machine (Universal Testing Machine)   |
| Testing Mashine                   |  |
| Model Number                      | RTI-1310   |
| Type, Mode and Capacity           | Screw Driving, Tension-Compression, 10 kN  |
| Manufacturer                      | A&D Company Limited  |
| Serial Number                     | *****  |
| Force Sensing Device              | Load Cell Type : UR-1KN-D  |
| Serial Number                     | *****  |
| Indicator                         | Data processing system (MSAT)  |
| Serial Number                     | —  |
| Manufacture                       | A&D Company Limited  |
| Calibration Range                 |  |
| Tension                           | 1 kN   |
| Compression                       | 1 kN   |
| Calibration Method                | According to JIS B 7721:2018   |
| Calibration Condition             | As shown on Calibration Report 1 and 2   |
| Calibration Results               | As shown on Calibration Report 3   |
| Calibration Date                  | mmm dd, yyyy   |

Date of issue: mmm dd, yyyy

1-243 ASAHI KITAMOTO-SHI SAITAMA-KEN  
364-8585, JAPAN  
Calibration Laboratory, A&D Company Limited,

The issue authority \_\_\_\_\_  
\*\*\*\*\* \*\*\*\*\*

This certificate is based on article 144 of the Measurement Act Law and indicates the result of calibration in accordance with measurement standards traceable to Primary Measurement Standards (National Standards) which realizes the physical units of measurement according to the International System of Units (SI). The accreditation symbol is an attestation of which the result of calibration is traceable to Primary Measurement Standards (National Standards).

The certificate shall not be reproduced except in full, without the written approval of the issuing laboratory.

The calibration laboratory who issued this calibration certificate conforms to ISO/IEC 17025:\*\*\*\*.

This calibration certificate was issued by the calibration laboratory accredited by IAJapan who is a signatory to the Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Accreditation Cooperation (APAC). This (These) calibration result(s) may be accepted internationally through ILAC/APAC MRA.

**Sample****AND****Calibration Report 1 : Calibration Conditions**

- 1) The calibration was performed by applying compressive force to the entire force transmission system and sensing device of the testing machine using the transfer standards listed on pages Calibration Report 2.
- 2) Three preloads were made just before three measurement series without rotational position change.
- 3) The time interval between subsequent preloadings and measurement series was 30 seconds.
- 4) The reading corresponding to each calibration force was taken just after applying or removing the force.
- 5) Reversible errors were determined at the lowest and highest ranges of the test machine.
- 6) The testing machine and relevant electrical equipment for the calibration were energized an hour before the calibration and were continuously kept energized throughout the calibration.
- 7) The temperature fluctuation of the transfer standards was within 2 °C during each calibration run and the ambient conditions of the calibration location were as follows:  
In the Calibration result 1.1, Temperature: \*\*. \* °C – \*\*. \* °C ,
- 8) Air pressure: \*\*\*\* hPa – \*\*\*\* hPa , Relative humidity: \*\* % – \*\* %  
The local gravity at the location is (\*. \*\*\*\*\* ± 0.00037) m/s<sup>2</sup>, where the number of following the symbol ± is the expanded uncertainty corresponds to a coverage probability of approximately 95 %.
- 9) Neither maintenance nor adjustment was carried out before the calibration.
- 10) No issue was observed in the general inspection of the testing machine.

Certificate No

\*\*\*\*\*-\*\*

Sample

AND

Calibration Report 2 : **List of Transfer Standards**

|   |   |
|---|---|
| Management Number                         | JT-046  |
| Type of Transfer Standard                 | Strain-Guage Force Measuring Instrument                         |
| Model and Serial Numbers                  | LC1205-K200, E6307614   |
| Mode of Force Application                 | Tension   |
| Serial Number of Indicator                | AD4401 : K4428563   |
| Available Force Range, Uncertainty, Class | 0.1 — 2 kN, 0.051 % ,class 0.5<br>0.2 — 2 kN, 0.035 % ,class 00 |
| Ambient Temperature when calibrated       | 23.9 °C ±1°C  |
| Certificate Number                        | *****   |
| Calibration Date                          | dd mmm yyyy   |
| Interpolation Equation                    | Available   |
|   | B0 1.033952 × 10 <sup>-5</sup>                                  |
|   | B1 2.158234 × 10 <sup>-5</sup>                                  |
|   | B2 1.147780 × 10 <sup>-13</sup>                                 |
|   | B3 2.817184 × 10 <sup>-19</sup>                                 |
| <br>                                      |   |
| Management Number                         | JT-049  |
| Type of Transfer Standard                 | Dead Weights  |
| Nominal Mass                              | 2 — 20 kg   |
| Relative Expanded Uncertainty             | 0.0003 %  |
| Certificate Number                        | *****   |
| Calibration Date                          | dd mmm yyyy   |
| <br>                                      |   |
| Management Number                         | JT-050  |
| Type of Transfer Standard                 | Dead Weights  |
| Nominal Mass                              | 0.2 — 4 kg  |
| Relative Expanded Uncertainty             | 0.0003 %  |
| Certificate Number                        | *****   |
| Calibration Date                          | dd mmm yyyy   |

Certificate No

\*\*\*\*\*-\*\*

**Sample****AND**Calibration Report 2 : **List of Transfer Standards**

|                               |                 |
|-------------------------------|-----------------|
| Management Number             | JT-057          |
| Type of Transfer Standard     | Dead Weights    |
| Nominal Mass                  | 0.005 — 3.33 kg |
| Relative Expanded Uncertainty | 0.0003 %        |
| Certificate Number            | *****           |
| Calibration Date              | dd mmm yyyy     |

The reported relative expanded uncertainty is stated as the relative combined standard uncertainty multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %

Sample

AND

## Calibration Report 3 : Calibration Results

1. Calibration force direction : Tension

Load Cell Capacity : 1 kN    Load Cell Type : UR-1KN-D    Load Cell Serial No : \*\*\*\*\*

1.1 Range Capacity : 1 kN    Class : 0.5

| Force<br>in<br>kN | Relative<br>Indication<br>Error in %<br>$q$ | Expanded<br>uncertainty<br>in %<br>$U$ | Relative error in %         |                             |               | Relative<br>Resolu-<br>tion in %<br>$a$ | Applicable<br>Transfer<br>standard |
|-------------------|---|--|-----------------------------|-----------------------------|---------------|---|------------------------------------|
|                   |   |  | Reproduci-<br>bility<br>$b$ | Reversi-<br>bility<br>$\nu$ | Zero<br>$f_0$ |   |                                    |
| 0.001             | -0.15                                       | 0.22                                   | 0.20                        | -----                       | 0.00          | 0.15                                    | JT-057, 050                        |
| 0.002             | -0.09                                       | 0.27                                   | 0.41                        | -----                       | 0.00          | 0.07                                    | JT-057, 050                        |
| 0.004             | -0.24                                       | 0.22                                   | 0.28                        | -----                       | 0.00          | 0.03                                    | JT-057, 050                        |
| 0.007             | -0.17                                       | 0.22                                   | 0.31                        | -----                       | 0.00          | 0.02                                    | JT-057, 050                        |
| 0.01              | -0.16                                       | 0.22                                   | 0.17                        | -----                       | 0.00          | 0.01                                    | JT-049, 057                        |
| 0.02              | -0.09                                       | 0.22                                   | 0.04                        | -----                       | 0.00          | 0.00                                    | JT-049, 057                        |
| 0.04              | -0.08                                       | 0.22                                   | 0.03                        | -----                       | 0.00          | 0.00                                    | JT-049, 057                        |
| 0.05              | -0.10                                       | 0.22                                   | 0.10                        | -----                       | 0.00          | 0.00                                    | JT-049, 057                        |
| 0.1               | -0.08                                       | 0.22                                   | 0.04                        | -----                       | 0.00          | 0.00                                    | JT-046                             |
| 0.2               | -0.06                                       | 0.22                                   | 0.04                        | -----                       | 0.00          | 0.00                                    | JT-046                             |
| 0.4               | -0.05                                       | 0.25                                   | 0.02                        | -----                       | 0.00          | 0.00                                    | JT-046                             |
| 0.6               | -0.07                                       | 0.25                                   | 0.03                        | -----                       | 0.00          | 0.00                                    | JT-046                             |
| 0.8               | -0.07                                       | 0.25                                   | 0.01                        | -----                       | 0.00          | 0.00                                    | JT-046                             |
| 1.0               | -0.07                                       | 0.25                                   | 0.01                        | -----                       | 0.00          | 0.00                                    | JT-046                             |

※The notes to the back page

Note: Designations of the symbols  $q$ ,  $U$ ,  $b$ ,  $\nu$ ,  $f_0$  and  $a$  are given in clause 4 of JIS B 7721 (ISO 7500-1). The relative errors were calculated according to the prescription in clauses 6.4.5, 6.4.8 and 6.5 of JIS B 7721 (ISO 7500-1), and the relative resolution was calculated according to the prescription in clauses 6.2 and 6.3, respectively.

Sample

AND

### Calibration Report 3 : Calibration Results

※Note

Calibration force direction : Tension

Range Capacity : 1 kN    Load Cell Type : UR-1KN-D    Load Cell Serial No : \*\*\*\*\*

This calibration connected Load Cell JT-046(2 kN), Weight JT-049(20 kg), JT-050(4 kg), JT-057(3.33 kg)

$$|q1 - q2| \leq b$$

q1: -0.08 % when Load Cell JT-046(2 kN) was measured with test force 0.1 kN

q2: -0.08 % when Weight JT-049(20 kg), JT-050(4 kg)

was measured with test force 0.1 kN

b(Reproducibility Relative error) : 0.5 % at class 0.5

$$|-0.08 - (-0.08)| \leq 0.5$$

∴ Judgment : OK

q1: -0.24 % when Weight JT-049(20 kg), JT-050(4 kg)

was measured with test force 0.007 kN

q2: -0.17 % when Weight JT-050(4 kg), JT-057(3.33 kg)

was measured with test force 0.007 kN

b(Reproducibility Relative error) : 0.5 % at class 0.5

$$|-0.24 - (-0.17)| \leq 0.5$$

∴ Judgment : OK

※As for the data, big one of the uncertainty is adopted.

End of certificate