

# Calibration and Certification

**Calibration certificate**

**Instrument:** S401  
**Serial number:** 1234 5768  
**Item number:** 569S 8371

**Test conditions:**

Test medium:	Air	Ambient temperature:	18...26°C
Test temperature:	23°C	Ambient humidity:	30...60% rH
Test humidity:	<30 %rH	Ambient pressure:	990...1050 mbar
Test pressure:	6 bar	Calibration range:	High speed
Testing tube D:	53.1 mm	Testing method:	Calibration by comparison

**References used:**

Type	Model	Uncertainty	S/N	Last Calibration
Turbine Flow Meter	FT-32	± 0.50%	14:1119E39096	10.2021
Laminar Flow Elements	LFE0	± 0.50%	1836000032	10.2021
	LFE1	± 0.50%	1802000011	10.2021
Sonic Nozzels	N0-N4	± 0.50%	831K033-37	10.2021

**Calibration test results:**

Description	Units	Nominal value	Permissible uncertainty	Actual value	Evaluation
Flow	m <sup>3</sup> /h	142.2	±(1.5 % + 0.3% FS)	143.1	passed
Flow	m <sup>3</sup> /h	285.4	±(1.5 % + 0.3% FS)	286.1	passed
Flow	m <sup>3</sup> /h	611.2	±(1.5 % + 0.3% FS)	611.2	passed

The above-mentioned calibration was performed according to SUTO ITEC working standards. Furthermore the calibration was performed by comparison with instruments, which have been calibrated at an ISO 17025 accredited calibration laboratory and is traceable to national standards. It represents the physical units according to the International System of units (SI). The reference measurement system used for this calibration has a total uncertainty of 0.65% (at confidence level: 95%)

We commend that this measuring instrument should be calibrated annually.

The product has been calibrated by:

**SUTO ITEC GmbH**  
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 78473 Hebersheim  
 Tel: +49 (0) 7634 50488-00  
 Fax: +49 (0) 7634 50488-19  
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 Web: www.suto-itec.com

**Calibration date:** 28.09.2022  
**SUTO Inspector:** F. Gleissner  
**Signature:**



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Signature:



**FLOW CALIBRATION**



**PARTICLE CALIBRATION**



**OIL VAPOR CALIBRATION**



**EXCHANGE CALIBRATION**



**DEW POINT CALIBRATION**



**PRESSURE CALIBRATION**



**TEMPERATURE CALIBRATION**



## Benefits

- ✔ SUTO owned high tech calibration facilities for Dew Point, Compressed Air Flow, Oil vapor, Pressure, Temperature in Germany, Hong Kong and China
- ✔ Flow calibration under pressure and a wide range for highest accuracy
- ✔ Real gas calibration system for technical gases
- ✔ SUTO Exchange Calibration Service to minimize downtimes
- ✔ References and certificates are traceable to national standards

### Flow Calibration Service

- Accuracy: < 0.5% o. RDG
- Range: 0... 260 m/s (20°C 1000 mbar)
- Pressure: 0... 0.7 MPa
- Pipe sizes: DN8... DN100
- Medium: Compressed Air and technical Gasses
- References: Sonic Nozzles, Laminar Flow Elements, Turbine Meter, Coriolis Meter

Flow rate	Reference	Measured	Relative error
1000	1000	1000	0.00%
500	500	500	0.00%
250	250	250	0.00%
125	125	125	0.00%
62.5	62.5	62.5	0.00%
31.25	31.25	31.25	0.00%
15.625	15.625	15.625	0.00%
7.8125	7.8125	7.8125	0.00%
3.90625	3.90625	3.90625	0.00%
1.953125	1.953125	1.953125	0.00%
0.9765625	0.9765625	0.9765625	0.00%



### Dew Point Calibration Service

- Accuracy Frost/Dew point:  $\leq \pm 0.1$  °C
- Accuracy Temperature:  $\leq \pm 0.07$  °C
- Calibration Range: -85... +15 °C Td
- Reference: MBW 373 Dew Point Hygrometer / Dew Point Mirror

Dew Point	Reference	Measured	Relative error
0	0	0	0.00%
-10	-10	-10	0.00%
-20	-20	-20	0.00%
-30	-30	-30	0.00%
-40	-40	-40	0.00%
-50	-50	-50	0.00%
-60	-60	-60	0.00%
-70	-70	-70	0.00%
-80	-80	-80	0.00%

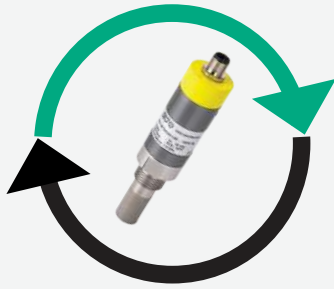


### Oli Vapor Calibration Service

- Accuracy:  $\leq \pm 3$  % o. RDG
- Gas: Isobutylene in synthetic air
- Reference: Traceable and certified gas
- Range: 0.000... 10.000 mg/m<sup>3</sup>
- Multiple activated carbon filtration system for accurate zero-point calibration

Concentration	Reference	Measured	Relative error
0	0	0	0.00%
10000	10000	10000	0.00%
5000	5000	5000	0.00%
2500	2500	2500	0.00%
1250	1250	1250	0.00%
625	625	625	0.00%
312.5	312.5	312.5	0.00%
156.25	156.25	156.25	0.00%
78.125	78.125	78.125	0.00%
39.0625	39.0625	39.0625	0.00%
19.53125	19.53125	19.53125	0.00%
9.765625	9.765625	9.765625	0.00%
4.8828125	4.8828125	4.8828125	0.00%
2.44140625	2.44140625	2.44140625	0.00%
1.220703125	1.220703125	1.220703125	0.00%
0.6103515625	0.6103515625	0.6103515625	0.00%
0.30517578125	0.30517578125	0.30517578125	0.00%
0.152587890625	0.152587890625	0.152587890625	0.00%
0.0762939453125	0.0762939453125	0.0762939453125	0.00%





## Exchange Service

### No Downtime anymore!

The exchange calibration service eliminates down time and enables users to have a seamless record of their dew point measurements.

The user receives in advance a calibrated instrument with calibration certificate and the same instrument settings. The onsite instrument is then switched against the calibrated one and returned to the supplier.

## Ordering

Please use the following table to assist in placing your order with our sales staff.

### Calibration and Certification

Order No.	Description
R200 0001	Flow calibration with certificate
R200 0005	Oil-& grease-free cleaning option for flow sensors (For Oxygen, it is already included in A1009.)
R200 0020	Re-calibration, real gas: O <sub>2</sub> , Ar, CO <sub>2</sub> , H <sub>2</sub> (H <sub>2</sub> real gas calibration needs to consult with manufacturer in advance)
R200 0021	Re-calibration, real gas: CH <sub>4</sub> , NG, N <sub>2</sub> O (please consult with manufacturer in advance)
R200 0022	Real gas calibration for He
R200 0030	Pressure sensor calibration 16bar(g) type, at 3 points
R200 0040	Re-calibration ultrasonic flow meter S460
R200 0050	Dew point calibration, one additional point, freely selectable in the range -75 ... +20 °C Td
R200 0070	Calibration for S531
R200 0080	Re-calibration per unit for S110 power meters or Rogowski coils
R200 0120	<b>General service and re-calibration:</b> - General inspection of the unit - Replacement of tubes and fittings - Cleaning of lamp and sensor - Assembly and test of unit - Calibration of oil sensor S120
R200 0130	Calibration for particle counter S130
R200 0131	Calibration for particle counter S132
R200 0600	<b>S600 Service and calibration:</b> - General inspection of the unit - Replacement of tubes and fittings - Cleaning of components - Cleaning of components - Assembly and test of unit - Calibration
R200 0610	Isokinetic sampler service / flow calibration
R699 3396	Dew point sensor calibration
R200 4610	Calibration for S461 ultra sonic transducer pair
R200 4613	Calibration for S461 temperature sensor
R200 4620	Calibration for S462



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