Declaration

Endress+Hauser
People for Process Automation

Certificate of Compliance ASME BPE

Order information

Customer	[redacted]
Customer purchase order	[redacted]
Sales order number / Item	[redacted]
Internal order number / Item	[redacted]

Device information

Description	Promass P 300 DN40 / 1 1/2"
TAG	H-4456-FIT/FE-5665
Serial number	T9031E16000
Order code	8P3B40-6DE0/0
Extended order code	8P3B40-CSIGAAAFADBCFHWAA1+EAEBJAJELWZ1

Statement

Hereby we confirm that the instrument furnished with this shipment is in compliance with the model numbers requested on the referenced purchase order and published Endress+Hauser specification. The instrument provided was manufactured, tested and inspected in accordance with accepted industry manufacturing practices, internal procedures and ASME BPE 2014 requirements as listed on the following page(s).

Surface roughness (wetted parts)	Ra max = 0.38 µm
Delta ferrite content (wetted parts)	< 1 %

Greenwood, 2022-09-30, [redacted]
Quality Assurance Manager

This document was generated electronically and is valid without signature.

Endress+Hauser Flow USA, Inc.
2330 Endress Place
Greenwood, IN 46143
USA
www.endress.com

Endress+Hauser
People for Process Automation

Certificate of Compliance ASME BPE

Device information

Description	Promass P 300 DN40 / 1 1/2"
TAG	H-4456-FIT/FE-5665
Serial number	T9031E16000

ASME BPE 2014 PI-4 Flowmeters

As specified in ASME BPE 2014 PI-4.1 the Coriolis sensor fulfills the requirements for installation and operation of Coriolis flowmeters specific to bioprocessing and pharmaceutical industries as well as other applications with hygienic requirements as per ASME BPE 2014 PI-4.1.1 General Considerations.

The Instrument consists of the essential components the flow tube(s), the manifold or flow splitter, and the process connections as per ASME BPE 2014 PI-4.1.2 Essential components which can affect the drainability.

The Instrument is constructed with one bent flowtube as per ASME BPE 2014 PI-4.1.3.1 Flowtubes and process connections as per ASME BPE 2014 PI-4.1.3.3 Process Connections. Eccentrically connections are included if ordered.

Information about correct installation is included in the shipment as per ASME BPE 2014 PI-4.1.4 Installation.

The Coriolis flowmeter is drainable by gravity if installed in vertical position as per ASME BPE 2014 PI-4.1.4.1 Drainability. Full drainability can also be achieved when installed in horizontal position in combination with eccentrically process connections.

The instrument consists of a single tube design and is therefore less prone to plugging as per ASME BPE 2014 PI-4.1.4.2 Cleanability.

The flowmeter can be installed vertically or horizontally as per ASME BPE 2014 PI-4.1.4.3 Mounting Location.

Specific instructions for orientation are provided as per ASME BPE 2014 PI-4.1.4.4 Orientation.

Passivation on site can damage the instrument and is only allowed with written consent of the manufacturer as per ASME BPE 2014 PI-4.1.4.5 Special Considerations for Passivation of Coriolis Flowmeters.

Performance of the instrument is defined according to ASME BPE 2014 PI-4.1.5 Performance, ASME BPE 2014 PI-4.1.5.1 Accuracy, ASME BPE 2014 PI-4.1.5.2 Process Influences and ASME BPE 2014 PI-4.1.5.3 Ambient Influences.

If necessary engineering data have been supplied the selected flowmeter is optimized to deliver best flowmeter performance over the flowrate range with a pressure drop that is acceptable for both CIP/SIP and normal operating conditions as per ASME BPE 2014 PI-4.1.6 Selection.

The Coriolis flowmeter does not require any special maintenance as per ASME BPE 2014 PI-4.1.7 Maintenance.

Process connections are fully welded as per ASME BPE 2014 PI-4.1.7.1 Seals/Gaskets.

The frequency of recalibration or verification of the flowmeter is governed by the criticality of the measurement and the nature of the operating conditions. The frequency of calibration verification shall be determined by the owner/user as per ASME BPE 2014 PI-4.1.7.2 Recalibration/Verification Schedule.

[redacted]

Test Report

Surface Roughness Test

Order Information

Customer	Endress+Hauser Flowtec AG, Greenwood, IN 46143
Irving Order number / item	[redacted]
E+H purchase order number	

Device Information

Description	PROMASS 1 ½" P PL3 Sensor / 15 RA / EP ID/OD
Pipe Number	5696427
Serial Number	T9031E16000

Procedure

Pre-Inspection	**Sensors have been visually and Olympus Videoscope inspected for manufacturing or welding flaws before mechanically polished**
Test specification	TS01031
Acceptance criterion	Ra ≤ 15 µin (0.38 µm)
Test equipment	Mahr Perthen Perthometer S3P1 - S/N 1566
Area of interest	Process wetted surfaces
Lubricants	**Only Vegetable based lubricant V-MGS52 is used during the polishing process**
Post-Inspection	**Sensors have been visually and Olympus Videoscope inspected for polishing flaws.**
EP FINISH	**Electro-Polished ID and Passivated per ASME-2019-BPE SF4.**

Measurements

Point	Location	µin / µm
M1	Inlet Tube & Weld	9.4 / 0.24
M2	Inlet Tube & Weld	9.0 / 0.23
M3	Inlet Process Connection	8.5 / 0.22
M4	Inlet Process Connection	8.1 / 0.21
M5	Outlet Tube & Weld	9.8 / 0.25
M6	Outlet Tube & Weld	9.5 / 0.24
M7	Outlet Process Connection	8.8 / 0.22
M8	Outlet Process Connection	8.4 / 0.21

Test result

Successfully passed

[redacted]

[redacted]

[redacted]

This is to certify that the following parts were processed according to standard process and your purchase order specifications:

PART NO.	1-1/2" PROMASS (MASK)
PART DESCRIPTION	Promass Sensor (EP ID & OD)
PURCHASE ORDER NO.	[redacted]
QUANTITY SHIPPED	1 PCS.
OPERATION PERFORMED	Electropolish and Passivate
ORDER NO.	[redacted]
SHIPMENT NO.	[redacted]
LOT NUMBER(S)	[redacted]
CERT DESCRIPTION	Electropolish & Passivate
REMARKS	

[redacted]

Phone: 1.888.868.2900 • Fax: 773.277.1655 • www.ableelectropolishing.com
ISO 9001:2015 and ISO 13485:2016 Certified Company
CHICAGO Corporate Headquarters Production Facility: 2001 S. Kilbourn Ave. Chicago IL 60623

Inspection Document

Endress+Hauser
People for Process Automation

Inspection certificate according to EN 10204 - 3.1

Order information

Customer	[redacted]
Customer purchase order	[redacted]
Sales order number / Item	[redacted]
Internal order number / Item	[redacted]

Device information

Description	Promass P 300 DN40 / 1 1/2"
TAG	H-4456-FIT/FE-5665
Serial number	T9031E16000
Order code	8P3B40-6DE0/0
Extended order code	8P3B40-CSIGAAAFADBCFHWAA1+EAEBJAJELWZ1

Statement

Hereby we confirm that the products supplied are in compliance with the requirements of the order. Additionally we confirm that the determined test results fulfil the requirements of the order. Furthermore, we declare that during the manufacturing of the products supplied, the valid Endress+Hauser procedures have been followed. Specific tests and inspections have been performed and the relevant releases have been given.

Inspection certificate(s) in detail

Please see the individual heat number documentation / test results (attached).

Inspector
Greenwood, 2022-09-30, Chris Brown

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Endress+Hauser Flow USA, Inc.
2330 Endress Place
Greenwood, IN 46143
USA
www.endress.com

Endress+Hauser
People for Process Automation

Inspection certificate according to EN 10204 - 3.1

Device information

Description	Promass P 300 DN40 / 1 1/2"
TAG	H-4456-FIT/FE-5665
Serial number	T9031E16000

List of parts

Qty.	Part	Material	Material Marking	Heat number	Certificate no.	Manufacturer
1	Measuring tube	1.4435/316/316L	T246551*1	I64724	178102	Franz Iten AG
2	Process connection	1.4435/316/316L	400984	400984	38476d	SPS Schiekel

Inspector
Greenwood, 2022-09-30, [redacted]

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Endress+Hauser Flow USA, Inc.
2330 Endress Place
Greenwood, IN 46143
USA
www.endress.com

Test Report

Endress+Hauser
People for Process Automation

Final Inspection Report

Order information

Customer name	[redacted]
Customer purchase order	[redacted]
Sales order number / Item	
Internal order number / Item	

Device information

Description	Cerabar PMP71B
TAG	PT -7510-11
Serial number	W101C615198
Order code	PMP71B-4F225/101
Extended order code	PMP71B-CDBADBH6BD3SJAAA0JF2+Z1

Additional information

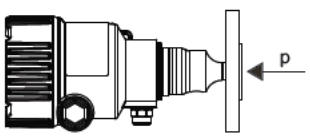
Output type	4-20 mA HART
Software version	01.00.01
Sensor range	-15...600 psi rel
Adjusted measuring range	0...550 psi rel
Maximum permissible error	± 0.075 % of span
Output mode	Linear

Procedure

Test specification	160000559 / 160000554, Comparison of unit under test (UUT) with standard
Test rig	15105 / 15106

Measuring condition

Ambient temperature	20.3 °C ±1 °C
Ambient pressure	991.7 mbar ±0.2 mbar
Ambient humidity	17.0 % rel. ±10 % rel.
UUT orientation	



Execution

Greenwood, 2024-01-17, 155718

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Endress+Hauser SE+Co.
2340 Endress Place
Greenwood. In. 46143-9772
USA
www.endress.com

Endress+Hauser
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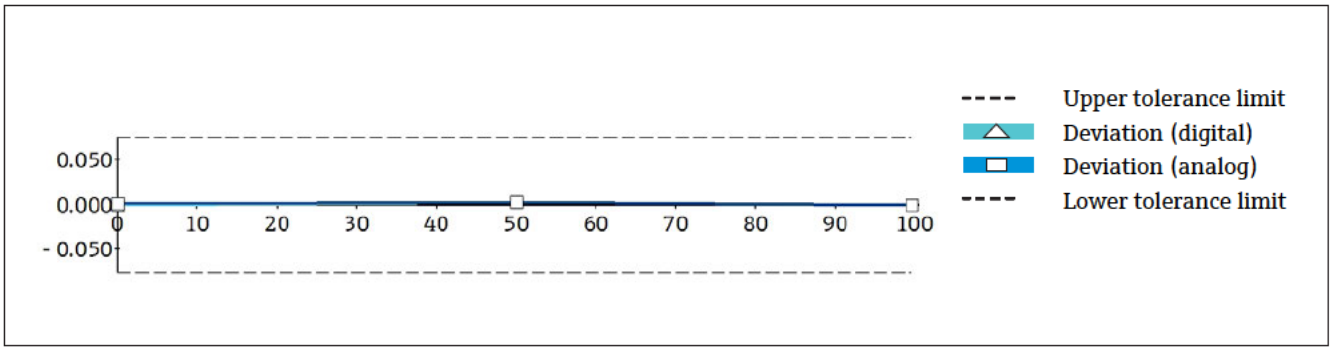
Final Inspection Report

Test result

Deviation
% of span



Test point	Reference pressure	UUT output (digital)	Measure-ment error (digital)	Measure-ment error (digital)	Reference pressure (Iout calc.)	UUT output (analog)	Measure-ment error (analog)
[%]	[psi]	[psi]	[% of span]	[psi]	[mA]	[mA]	[% of span]
0	0.00062	0.00062	0.00000	0.00000	4.00002	4.00025	0.00146
50	274.877	274.893	0.00281	0.01600	11.9964	11.9968	0.00258
99.6	547.899	547.899	0.00000	0.00000	19.9389	19.9389	-0.00006

Hereby we confirm that all applicable tests according to the Quality plan (IP00008P) have been performed successfully.

Test	Procedure number	Test description
Contract review	TS00001F	As required in ISO 9001
Incoming goods inspection	TS00003F	Verification of conformance to the specified requirements
Printed circuit boards test	TS00009F	In-circuit test and functional test
High voltage test	TS00002F	The voltage used is chosen depending on operating voltage, terminals and approvals in accordance to the valid national / international standards
Welding inspection	TS00010F	Quality and tightness of the welding seams
Functional test of sensor	TS00022P	Check the sensor function
Calibration of instrument	TS00023P	Measurement, adjustment and verification of lower range value, upper range value and output signal
Final check of instrument	TS00024P	Verification of general functionality and customer specific settings
Outgoing visual check	TS00006F	Visual inspection of completeness and correctness of the instrument and the markings
Logistical verification	TS00005F	Automatic verification in the delivery phase via barcode that the instrument correspond to the order

Hereby we confirm that all measuring equipment used to assure the quality of the products has been calibrated and is traceable to national or international standards.

Endress+Hauser
People for Process Automation

Flow Calibration with Adjustment

22546833-6507962

[redacted]
Purchase order number

[redacted] / Endress+Hauser Flowtec AG
Order N°/Manufacturer

5W4C3H-1E7R8/0
Order code

Promag W 400 12"
Sensor/Transmitter

V6035619000
Serial N°

FE/FIT-24-1500
Tag N°

FCP-7.1.1
Calibration rig

175 l/s (≙ 100 %)
Calibrated full scale

Service interface
Calibrated output

1.6835
Calibration factor

2.0
Zero point

79.7 °F
Water temperature

Flow [%]	Flow [l/s]	Duration [s]	V target [l]	V meas. [l]	Δ o.r.* [%]
50.0	87.512	60.1	5255.75	5256.43	0.01
98.5	172.289	60.1	10347.4	10348.2	0.01
98.5	172.394	60.1	10354.5	10353.7	-0.01
–	–	–	–	–	–
–	–	–	–	–	–
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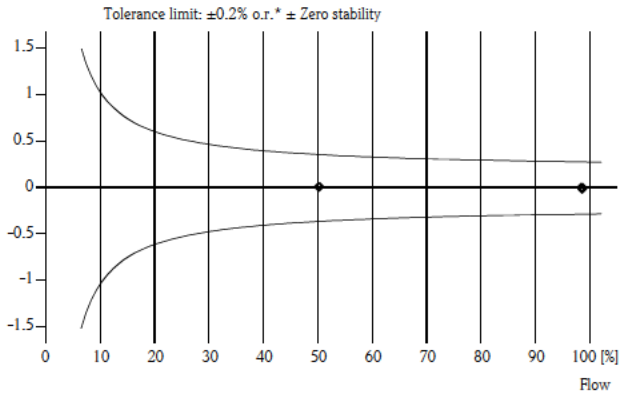
–	–	–	–	–	–
–	–	–	–	–	–

*o.r.: of reading

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN), Suzhou (CN) and Itatiba (BR).

[redacted]

10.08.2023
Date of calibration

[redacted]
Operator

Endress+Hauser Flowtec AG
35, Rue de l'Europe
F-68700 Cernay

Certified acc. to
ISO 9001