Certificate of Compliance

Certificate: 80176831 **Master Contract:** 605593

Project: 80176831 **Date Issued:** August 23, 2023

Issued to: **Anton Paar GmbH**
Anton Paar Straße 20
Graz
Styria
8054
Austria

Attention: **Stefan Doppelhofer**

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: *H. Gambell*
H. Gambell

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT Intrinsically Safe, Entity - For Hazardous Locations
CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations - Certified to US Standards

Ex ib IIC T* Gb
Class I, Zone 1, AEx ib IIC T* Gb

• Mass Flow Sensor, Model A **a bcd**-x**e**xxx-**gh**x-**if**xxxxx-x			
Suffix	Explanation	Value	Explanation
a	Model	A	AU **sensors**
bcd	Nominal size	00A to 250	AU00A, AU001, AU00D, AU003, AU004, AU006, AU010, AU015, AU025, AU040, AU040, AU050, AU080, AU100, AU150, AU15H, AU200, AU20H, and AU250
e	Temp. category	1	Standard -40°C to +130°C
		2	Standard +130°C to 200°C
		3	High temperature service +200°C to +320°C
		4	Cold temperature service -200°C to +50°C

f	Transmitter location	1	Integrally mounted with sensor
		2	Separately from sensor
g	Certification Body	4	CSA C/US
h	*Temperature Classification	1	T1 –AU025 to AU150 High temperature models, separate model only Ambient Temperature: -20°C to +50°C Process Temperate: -20°C to +350°C
		2	T2 – AU003, AU006 to AU250 Separate models only Ambient Temperature: -40°C to +60°C Process Temperate: -40°C to +200°C
		3	T3 –AU00A to AU250 Separate models only Ambient Temperature: -40°C to +60°C Process Temperate: -40°C to +150°C
		4	T4 – AU00A to AU250 Integral and separate models Ambient Temperature: -40°C to +60°C Process Temperate: -40°C to +80°C
		5	T5 –AU025 to AU250 Low temperature models, separate models only Ambient Temperature: -20°C to +50°C Process Temperate: -200°C to +50°C
i	Transmitter	1	L-Cor (PA0K)

Conditions of Use:

1. The pickoff coil circuit and temperature sensor circuit shall be grounded
2. Intrinsically safe when field wiring is done per Wiring Diagram on page 31 of the instruction manual L-740APEX-1
3. Intrinsically safe when installed to a transmitter certified for intrinsic safety with the following entity parameters, per specification table below.

Electrical Ratings –AU series

The drive coil circuit may be connected to a certified transmitter with intrinsically safe circuits which has the following entity parameters available to facilitate the connection of the drive coil of the AU sensor: **Ui=12.3V; Ii=0.878A** (resistively limited); **Pi=2.7W; Ci=0µF**.

The maximum internal inductance Li and the minimum series resistance Ri of the drive coil circuit depend on the sensor model used, in accordance with the following table:

Sensor Model	Maximum coil inductance Li (mH)	Minimum coil resistance Ri (Ω)	Series resistance in the drive circuit (Ω)
AU Series			
AU00A	8.1	161	2400±1% (x2)
AU001	8.0	178	2400±1%(x2)
AU003	3.6	76.2	2400±1%
AU004	**15.2**	**159**	1000±1%(x2)
AU006, AU010	2.0	45	1000 ±1%(x2)
AU015	**15.2**	**159**	330±1%(x2)
AU025	55.6	348	330 ±1%(x2)
AU040, AU050	31.0	172	330 ±1%(x2)
AU080,	13.9	89	200 ±1%(x2)
AU100, AU150	13.9	89	270 ±5%
AU15H, AU200	4.9	69	220 ±5%
AU20H, AU250	5.4	79	220 ±5%
AU00D	3.6	69	2400 ±1%(x2)
AU Series Low-temp models			
AU025	55.6	0	560 ±5%
AU040, AU050	31.0	0	390 ±5%
AU080, AU100, AU150	13.9	0	270 ±5%
AU15H, AU200	4.9	0	220 ±5%
AU20H, AU250	5.4	0	220 ±5%
AU Series High-temp models			
AU025	0.78	10.30	75 ±5%
AU040, AU050	1.43	15.73	75 ±5%
AU080, AU100, AU150	0.99	17.90	75 ±5%

The pickoff coil and the temperature sensor circuit may be connected to a certified transmitter with intrinsically safe circuits which has the following entity parameters available to facilitate the connection of the pickoff coil of the AU sensor: **Ui=15.0V; Ii=17mA** (resistively limited); **Pi=64mW; Ci=0µF.**

The maximum internal inductance Li and the minimum series resistance Ri of the pickoff coil circuit depend on the sensor model used, in accordance with the following table

Sensor Model	Maximum coil inductance Li (mH)	Minimum coil resistance Ri (Ω)	Series resistance in the pickoff circuit (Ω)
AU Series			
AU00A	8.1	161	-
AU001	8.0	178	-
AU003	3.6	76.2	-
AU004, AU00D	3.6	69	-
AU006, AU010, AU015, AU025, AU040, AU050, AU080	2.0	45	-
AU100, AU150	1.1	18	560±5%
AU15H, AU200, AU20H, AU250	33.0	188	560±5%
AU Series Low-temp models			
AU025, AU040, AU050, AU080	8.0	0	560±5%
AU100, AU150	1.1	0	560±5%
AU15H, AU200, AU20H, AU250	33.0	0	560±5%
AU Series High-temp models			
AU025, AU040, AU050, AU080, AU100, AU150	1.45	13.5	390±5%

The internal inductance of the temperature sensor circuit is Li=0 mH

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Ex ib IIB T* Gb
Class I, Zone 1, AEx ib IIB T* Gb

• Mass Flow Sensor, Model A **a bcd**-x**e**xxx-**gh**x-**if**xxxxx-x			
Designation	Explanation	Value	Explanation
a	Model	B	**AB sensors**
		S	**AS sensors**
bcd	Nominal size	006 to 050	AB006, AB010, AB015, AB025, AB040, AB050
		010 to 080	AS010, AS015, AS025, AS040, AS050, ASR50, AS080
e	Temp. category	1	Standard -40°C to +130°C
f	Transmitter location	1	Integrally mounted with sensor
		2	Separately (remotely) from sensor
g	Certification Body	4	CSA C/US
h	***Temperature Classification	3	T3 –AB006 to AB050, and AS010 to AS080 Separate model only Ambient temperature: -40°C to +60°C except AS080 Process temperature: -40°C to +125°C: AB Series Process temperature: -40°C to +130°C: AS Series, except AS080 AS 080 Ambient temperature: -20°C to +60°C Process temperature: -20°C to +130°C
		4	T4 –AB 006 to AB050, and AS010 to AS080 Integral and separate Ambient temperature: -40°C to +60°C except AS080 Process temperature: -40°C to +80°C: all except AB015 and AS080 AB015 Ambient temperature: as above Process temperature: -40°C to +70°C AS080 Ambient temperature: -20°C to +60°C Process temperature: -20°C to +80°C
i	Transmitter	1	L-Cor (PA0K)

Conditions of Use:

1. The pickoff coil circuit and temperature sensor circuit shall be grounded
2. Intrinsically safe when field wiring is done per Wiring Diagram on page 31 of the instruction manual L-740APEX-1
3. Intrinsically safe when installed to a transmitter certified for intrinsic safety with the following entity parameters, per specification table below.

Electrical Ratings – AB and AS series

The drive coil circuit may be connected to a certified transmitter with intrinsically safe circuits which has the following entity parameters available to facilitate the connection of the drive coil of the AB or AS sensor: **Ui=12.3V; Ii=0.878A** (resistively limited); **Pi=2.7W; Ci=0µF.**

The maximum internal inductance Li and the minimum series resistance Ri of the drive coil circuit depend on the sensor used, in accordance with the following table:

Sensor Model	Maximum coil inductance Li (mH)	Minimum coil resistance Ri (Ω)	Series resistance in the drive circuit (Ω)
AB Series			
AB006, AB010	3.6	69	1000±1%
AB015	15.2	159	-
AB025	55.6	358	-
AB040, AB050	31.0	173	-
AS Series			
AS010, AS015	12.3	202	-
AS025	15.3	174	-
AS040	8.0	85	-
AS050, ASR50	6.8	87	-
AS080	2.9	54	-

The pickoff coil and the temperate sensor circuit may be connected to a certified transmitter with intrinsically safe circuits which has the following entity parameters available to facilitate the connection of the pickoff coil of the AB or AS sensor: **Ui=15.0V; Ii=17mA** (resistively limited); **Pi=64mW; Ci=0µF.**

The maximum internal inductance Li and the minimum series resistance Ri of the pickoff coil circuit depend on the sensor used, in accordance with the following table:

Sensor Model	Maximum coil inductance Li (mH)	Minimum coil resistance Ri (Ω)	Series resistance in the pickoff circuit (Ω)
AB Series			
AB006, AB010, AB015, AB025, AB040, AB050	3.6	69	-
AS Series			
AS010, AS015, AS025, AS040, AS050, ASR50, AS080	7.2	151	-

The internal inductance of the temperature sensor circuit Li=0 mH

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 61010-1-12 (3rd Edition)	Safety Requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General Requirements
UL Std. No. 61010-1 (3rd Edition)	Safety Requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General Requirements
CAN/CSA Standard C22.2 No. 60079-0:11 *December 2011*	Explosive atmospheres - Part 0: Equipment - General requirements
ANSI/UL 60079-0 (2009) Seven Edition	Explosive atmospheres – Part 0: Equipment – General Requirements
CAN/CSA-C22.2 No. 60079-11:19	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”
ANSI/UL 60079-11:2013 Edition 6,	Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety ’i’

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

The following markings appear on a CSA Certified (Class 7921-09) and UL Recognized (PGDQ2 or PGJI2) adhesive nameplate, which is suitable for use on polymeric material or metal at the maximum service temperature of the sensor, per nomenclature table. These markings may also be rigid, mechanically secured, provided by laser etching on permanently marked metal nameplate using stainless steel wire to the outside of the device.

- Manufacturer’s name: “Anton Paar GmbH”, or CSA Master Contract Number “605593”, adjacent to the CSA Mark in lieu of manufacturer’s name
- Model number: As specified in the PRODUCT nomenclature section, above.
- Electrical rating specification, per Electrical Ratings tables, above: including filed transmitter entity parameters (drive coil and pickoff coil) and sensor ratings per table
- Safety related symbol: ISO 3864 No. B.3.1  Special Conditions of Use, consult accompanying literature
- Coils with rated Low and High operating temperature shall include the symbol for hot surfaces (IEC 60417 – 5041 )
- Manufacturer date in MMYY format, or serial number, traceable to month of manufacture.

- The products listed are eligible to bear the CSA Mark shown with adjacent indicators ‘C’ and ‘US’ for Canada and US, or with adjacent indicator ‘US’ for US only, or without either indicator for Canada only:

  , or , or .
- Certificate Number Reference (CSA23.80176831);
- Hazardous Locations designations: As specified in the PRODUCTS section, above.
- Temperature Code: As specified in the PRODUCTS tables, above.
- Ambient temperature range: As specified in the PRODUCTS tables, above.
- The following words:

    - “INTRINSICALLY SAFE" and “SÉCURITÉ INTRINSÈQUE" or equivalent wording.
    - “WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY” and “AVERTISSMENT: SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE” or equivalent wording.

An installation manual or data sheet shall be supplied with each unit, containing the above product information but without the use of CSA Certification mark on such literature; reference to applicable standards is acceptable. The installation manual or data sheet shall also include all caution and warning words described above, as well as corresponding Safety related symbols.

Notes:

Products certified under Class C225804, C225884 have been certified under CSA’s ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca