



Certificate of Compliance

Certificate:	80191567	Master Contract:	151079
Project:	80191567	Date Issued:	2025-06-13
Issued to:	Endress+Hauser SE+Co. KG Hauptstrasse 1 Maulburg, Baden- Württemberg 79689 Germany	Issued by:	<i>Sorin Tat</i> Sorin Tat

Attention: Armin Hummelbrunn

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.



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

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

Model(s)
Compact Line Vibronic sensor models Liquiphant FTL43 and FTL60



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IS Class I, Division 1, Groups A, B, C, and D, T4...T1
Class II, Division 1, Groups F and G; Class III T135°C
Class I, Zone 0, AEx ia IIC T4...T1 Ga
Zone 20, AEx ia IIIB T135°C Da

NIFW Class I, Division 2, Groups A, B, C, and D, T4...T1
Class II, Division 2, Groups F and G; Class III T135°C
Class I, Zone 2, AEx ic IIC T4...T1 Gc
Zone 22, AEx ic IIIB T135°C Dc

Compact Line Vibronic sensor models Liquiphant FTL43 and FTL60, 12...30 Vdc, 2-wire 4-20 mA, HART, Bluetooth, IP 66/IP 68/IP 69, Type 4X, Type 6P, indoor only .Intrinsically Safe or Non-Incendive Field Wiring device(NIFW) when installed in accordance with installation/control drawing number XA03513F-A.

CLASS 2258 04 PROCESS CONTROL EQUIPMENT – Intrinsically Safe, Entity – For Hazardous Locations

Model(s)
Compact Line Vibronic sensor models Liquiphant FTL43 and FTL60

IS Class I, Division 1, Groups A, B, C, and D, T4...T1
Class II, Division 1, Groups F and G; Class III T135°C
Ex ia IIC T4...T1 Ga
Ex ia IIIB T135°C Da
NIFW Class I, Division 2, Groups A, B, C, and D, T4...T1
Class II, Division 2, Groups F and G; Class III T135°C
Ex ic IIC T4...T1 Gc
Ex ic IIIB T135°C Dc

Compact Line Vibronic sensor models Liquiphant FTL43 and FTL60, 12...30 Vdc, 2-wire 4-20 mA, HART, Bluetooth, IP 66/IP 68/IP 69, Type 4X, Type 6P, indoor only .Intrinsically Safe or Non-Incendive Field Wiring device(NIFW) when installed in accordance with installation/control drawing number XA03513F-A.

Order-codes models Liquiphant FTL43 and FTL60:

	FTL	43	60	-aa bb c d e f g h ii jj kkk + ll mm nn oo pp qq rr γγ
aa=10				Approval:
	CB	X	X	CSA C/US IS CL.I,II,III Div.1 Gr.A-D,F,G T4, AEx/Ex ia IIC T4, AEx/Ex ia IIIB
	CE	X	X	CSA C/US CL.I Div.2 Gr.A-D T4 (NIFW), AEx/Ex ic IIC T4
bb=20				Output:
	BA	X	X	2-wire 4-20mA (8/16mA) HART
c=30				Display; Operation:
	B	X	X	LED



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	C	X	X	LED with control button
	D	X	X	LED with control button + Bluetooth
	Y	X	X	Modification of the above named option in (e.g. colour of LED). Not relevant for explosion protection.
d=40				Housing; Material:
	F	X	X	Compact; 316L
e=50				Electrical Connection:
	N	X	X	Plug M12, IP66/68/69 NEMA Type 4X/6P
	Y	X	X	Modification of the above mentioned option. Not relevant for explosion protection.
				Application
f=60	A	X	X	Process max 150oC/302oF, max 64bar
	B		X	Process max 150oC/302oF, max 100bar
	Y	X	X	Modification of the above mentioned option. Not relevant for explosion protection.
g=80				Surface Refinement:
	A	X		Standard Ra<1.5µm/59µin
	A		X	Standard Ra<3.2µm/126µin
	B	X		Hygienic Ra<0,76 µm/30 µin
	D	X		Hygienic Ra<0.3µm/12µin mech. polished
	E	X		Hygienic Ra<0.38µm/15µin electropolished
	Y	X	X	Modification of the above mentioned option (e.g. different Ra). Not relevant for explosion protection.
h=85				Type of Probe:
	1	X	X	Compact version
	2	X	X	Tube extension
	3	X	X	Short tube version
	9	X	X	Modification of the above mentioned option (e.g. shorter than standard version, probe angled). Not relevant for explosion protection.
ii=90				Sensor Length: Material:
	AC		X	Compact version; AlloyC22
	AJ	X	X	Compact version; 316L
	BC		X	Short tube version; AlloyC22
	BJ	X	X	Short tube version; 316L
	BL	X		153 mm L, Ra<1.5µm/59µin; 316L
	BS	X		253 mm L, Ra<1.5µm/59µin; 316L
	BL		X	153 mm L, Ra<3.2µm/126µin; 316L
	BS		X	253 mm L, Ra<3.2µm/126µin; 316L
	CC		X	 mm L, Ra<3.2µm/126µin; AlloyC22
	CJ		X	 mm L, Ra<3.2µm/126µin; 316L
	CJ	X		 mm L, Ra<1.5µm/59µin; 316L
	DC		X	 inch L, Ra<3.2µm/126µin; AlloyC22
	DJ		X	 inch L, Ra<3.2µm/126µin; 316L
	FJ	X		 mm L, Ra<0.3µm/12µin; 316L



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	GJ	X		 mm L; Ra<0.38µm/15µin electro polished; 316L
	KJ	X		 inch L; Ra<1.5µm/59µin; 316L
	MJ	X		 inch L; Ra<0.3µm/12µin; 316L
	NJ	X		 inch L; Ra<0.38µm/15µin electro-polished; 316L
	YY	X	X	Modification of one of the above mentioned options (max. L=6m, e.g. material Duplex steel, different Alloy-C-version). Not relevant for explosion protection.
jj=105				Process connection, Sealing Surface:
	##	X	X	Standard industrial process connection: threaded, flange (e.g. Varivent, Clamp/Tri-Clamp, Thread EN10226 (R), Thread ISO228 (G),...)
	99	X	X	Modification of one of the above mentioned options (customer specific connections). Not relevant for explosion protection.
kkk=110				Process Connection:
	###	X	X	Standard industrial process connection: flanges, threaded, flush mount diaphragm seal, 316L, Alloy C22
	9YY	X	X	Modification of one of the above mentioned options (customer specific connections). Not relevant for explosion protection.
ll=540				>>Application Package:
	EH	X	X	Heartbeat Verification + Monitoring
	E9	X	X	Modification of one of the above mentioned options (customer specific variant). Not relevant for explosion protection.
mm=570				>>Service:
	##	X	X	Representing different services like cleaned from oli + fat, cleaned for Oxygen applications, settings to the device different from delivery standard or product documentation on paper, etc.. Not relevant for explosion protection.
	I9	X	X	Special version (only modification by firmware) not given in the standard order code. Examples: Switch Point, Switch Time or Switch Density, Foam Detection. Not relevant for explosion protection.
nn=580				>>Test, Certificate, Declaration:
	##	X	X	Material certificates wetted metallic parts, pressure test, leakage test, PMI-test. Not relevant for explosion protection.
	K9	X	X	Modification of one of the above mentioned options: Customer specific variant. Not relevant for explosion protection.
oo=590				>>Additional Approval:
	##	X	X	Additional approvals, no influence to explosion protection; e.g.: SIL, WHG, Ship building, drinking water, CRN. Not relevant for explosion protection.
	L9	X	X	Modification of one of the above mentioned options: Further approvals. Not relevant for explosion protection.
pp=600				>Sensor Design:
	MR	X	X	Temperature spacer
	MS	X	X	Temperature spacer + Pressure tight feed through (Second line of defence)



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	M9	X	X	Modification of one of the above mentioned options or special sensor version not given in the standard order code: Shorter, Longer or Angled version of the sensor tube. Not relevant for explosion protection.
qq=620				>>Accessory Enclosed:
	##	X	X	Not part of the approval, because only enclosed parts. Example: Accessory can be a weld-in adapter, plug connector M12 with/without cable. M12 made in plastic or metal with different
rr=850				>Firmware Version
	##	X	X	Representing different firmware versions. Not relevant for explosion protection.
γγ=895				>>Marking:
	Zx	X	X	Tagging acc. customer order. Not relevant for explosion protection.

Legend for codes above "500":

> optional ordercode, single selection

>> optional ordercode, multiple selection

Entity parameters of model FTL43 and FTL60:

The entity parameters, in type of protection AEx/Ex ia IIC, or for use in Class I, Division I, Group A, B, C and D:

U_i = 30 V ; I_i = 100 mA; P_i = 700 mW; C_i = 15nF; L_i = 0.69 mH

and in type of protection AEx/Ex ia IIIB or for use in Class II, Division 1, Group F, G and Class III:

U_i = 30 V I_i = 100 mA P_i = 650 mW C_i = 15nF L_i = 0.69 mH

Entity parameters for NIFW(Non Incendive Field Wiring) device when used in Class I, Division 2, Group A, B, C and D are identical with entity parameters for AEx/Ex ia IIC or AEx/Ex ic IIC.

NOTES:

1. The above models are DC supplied (connected to mains via separately approved power supply unit, not part of this investigation); Permanently connected, Pollution degree 2

Mode of operation: Continuous.

2. Environmental Conditions: Extended (Specify): -40 °C to +85 °C, Altitude up to 5000 m, Rel. humidity: up

to 100%, IP66/IP68/IP69, Type 4X, Type 6P, Indoor use only

Process pressure for model FTL43: max. Vacuum to 64 bar.

Process pressure for model FTL60: max. Vacuum to 100 bar.

APPLICABLE REQUIREMENTS

CSA C22.2 No. 60079-0:19 - Fourth Edition - Explosive atmospheres — Part 0: Equipment — General requirements

ANSI/UL 60079-0-2020 Seventh Edition - Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements

CAN/CSA C22.2 No. 60079-11:14 - Second Edition - Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"



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ANSI/UL 60079-11-2018 Sixth Edition - Explosive atmospheres - Part 11: Equipment protection by intrinsic safety ‘i’

FM 3600:2022 - Electrical Equipment for Use in Hazardous (Classified) Locations – General Requirements

FM 3610:2021 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III, Division 1, Hazardous (Classified) Locations

CSA C22.2 No.60079-40:20 - First Edition - Explosive atmospheres - Part 40: Requirements for process sealing between flammable process fluids and electrical systems

ANSI/UL 122701-2022 - Fourth Edition - UL Standard for Safety Requirements for Processing Sealing Between Electrical Systems and Flammable or Combustible Process Fluids

CAN/CSA C22.2 No. 213-17 - Third Edition - Including update No. 3: April 2021 - Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Division 1 and 2 hazardous (classified) locations

ANSI/UL 121201:2017 - Ninth Edition - UL Standard for Safety Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations

FM 3611:2021 - Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations

Conditions Of Acceptability

- The device may only be powered by a power supply unit with a limited energy electric circuit in accordance with CSA/UL/EN/IEC 61010-1:2010 chapter 6.3.1/6.3.2 and 9.4 or class 2 according to CSA 223/UL 1310.
- Equipment has only been tested for electrical safety. No evaluations of functional safety and performance characteristics have been performed.
- In applications where the process temperature exceeds the temperature class, the hot surface ignition at the process connecting parts of the device shall be monitored.
- To avoid electrostatic charging in explosive atmospheres, avoid rubbing of the non-metallic surfaces using electrostatic generating materials. Do not use the device in applications with moving dust atmosphere causing electrostatic charging.
- It is essential for the device to use a power supply that is galvanically isolated from earth.
- When using an intrinsically safe barrier, the barrier must be connected to the same earth as the device.
- Maximum working pressure (MWP) for model FTL 43 is 64 bar and for FTL 60 is 100 bar.
- Pipe/tube extension version is max. 6m and was included in the intrinsically safe evaluation.
- Only the surface roughness with the order code g (080) = A for FTL43 and FTL60 can be used for EPL Da/Gb and EPL Ga/Db applications.
- The FTL 43/60 models with surface roughness with the order code g (080) = D, E shall not be exposed to environmental, chemical or physical factors that could affect the partition.
- The process connection including sealing should maintain a tight joint as IP66 or IP67 according to IEC 60529 under the max process pressure conditions.
- The FTL 43/60 device has to be installed within a maximum range of the ambient $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}$ and a maximum process temperature of 150°C but there is an ambient and process temperature derating for T4 and T3 temperature class as provided in Safety Instruction file.
- “Single Seal” is only used for the ‘Basic specification’, Position 9 = A. Sensors made from corrosive resistant material shall not be exposed to environmental, chemical or physical factors that could affect the partition.



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Notes:

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





Supplement to Certificate of Compliance

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*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80191567	2025-06-13	Original cCSAus certification of Compact Line Vibronic sensor models Liquiphant FTL43 and FTL60.