Certificate of Compliance

Certificate: 70105943 **Master Contract:** 151079

Project: 80138828 **Date Issued:** 2022-10-14

Issued To: **Endress+Hauser SE+Co. KG**
Hauptstrasse 1
Maulburg, Baden-Württemberg, 79689
Germany

Attention: Jan Krögerrecklenfort

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: *Alison Cheng*
Alison Cheng

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 ia IIC T4…T1 Ga
Class I, Zone 0, AEx ia IIC T4…T1 Ga
IS Class I, Division 1, Groups A, B, C, D; T4…T1

Product	Microwave liquid level sensors Micropilot **FMR20-CB**bccdddeeef+gghhii	
	Where	
	b (output)	= A, P, R
	cc (antenna)	= BM, BN, CN
	ddd (process connection, rear)	= VCE
	eee (process connection, front)	= RPF, RRF, RSF, VEE, VFE, WFE, WGE
	f (cable length)	= 1, 2, 3
	gg (service)	= alphanumeric characters (not relevant for safety)

	hh (flange accessory) = alphanumeric characters (option hh = R5 is not permitted when output "b" = R) ii (tagging) = alphanumeric characters (not relevant for safety)
Electrical Rating	10.5-30 Vdc, 4-20 mA (2-wire HART) 5-30 Vdc, 100 mW (4-wire, Modbus RS485)
Enclosure Rating	Type 6P; IP68
Temp. code and ambient temperature	T4…T1 -40 °C ≤ Tamb ≤ +80 °C
Process temperature and MWP	Max process temperature: + 80°C Maximum Working Pressure (MWP): 0.8 to 1.1 bar / 11.60 to 15.95 psi
Intrinsically safe wiring parameters	2-wire 4-20 mA HART (option b = A or P): Ui / Vmax = 30 V Ii / Imax = 100 mA Pi / Pmax = 750 mW Ci = 15nF Li = 35µH 4-wire Modbus RS485 (option b = R): Supply: Ui / Vmax = 30 V; Ii / Imax = 100 mA; Pi / Pmax = 650 mW; Ci = 10nF; Li = 20µH RS485-Fieldbus: Ui / Vmax = 4.2 V; Ii / Imax = 4.8A; Uo / Uoc = 4.2 V; Io / Isc = 149mA; Ci = 97uF; Li = 0nH; Cable Inductance : 0.8uH/m; Cable Capacitance : 45pF/m
Installation Drawing	Intrinsically Safe when wired per drawing XA01445F
Conditions of Acceptability	1. Because of the risk of discharge the non-metallic parts of the equipment and of all non-metallic accessories must be protected from electrostatic charging during installation and operation. The optional horn extension antenna must be arranged in such a way that it cannot have contact to a flowing medium. If the optional horn extension is mounted in an accessible position it must be protected from electrostatic charging (e.g. only wipe with damp cloth and do not expose to high voltage fields). 2. The end user shall ensure appropriate earthing of the metallic NPT adapter and all metallic accessories upon installation. 3. If the accessory RIA15 (option hh=R5) is connected to the FMR20 liquid level sensor, the RIA15 must not be supplied by its original supply parameters but with the supply parameters of the FMR20 liquid level sensor (Ui / Vmax = 30 V, Ii / Imax = 100 mA, Pi / Pmax = 750 mW) and the supply must be suitable to be connected to the accumulated internal capacitance (Ci) and inductance (Li) of the FMR20 liquid level sensor and the accessory RIA15.

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations

CLASS 2258 83 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations– Certified to U.S. Standards

Class I, Division 2, Groups A, B, C, D: T4…T1, NIFW

Product	Microwave liquid level sensors Micropilot **FMR20-CC**bccdddeeef+gghhii Where b (output) = A, P, R cc (antenna) = BM, BN, CN ddd (process connection, rear) = VCE eee (process connection, front) = RPF, RRF, RSF, VEE, VFE, WFE, WGE f (cable length) = 1, 2, 3 gg (service) = alphanumeric characters (not relevant for safety) hh (flange accessory) = alphanumeric characters (option hh = R5 is not permitted when output "b" = R) ii (tagging) = alphanumeric characters (not relevant for safety)
Electrical Rating	10.5-30 Vdc, 4-20 mA (2-wire HART) 5-30 Vdc, 100 mW (4-wire, Modbus RS485)
Enclosure Rating	Type 6P; IP68
Temp. code and ambient temperature	T4…T1 -40 °C ≤ Tamb ≤ +80 °C
Process temperature and MWP	Max process temperature: + 80°C Maximum Working Pressure (MWP): 0.8 to 1.1 bar / 11.60 to 15.95 psi
Non-incendive field wiring parameters (NIFW)	2-wire 4-20 mA HART (option b = A or P): Ui / Vmax = 30 V Ii / Imax = 100 mA Pi / Pmax = 750 mW Ci = 15nF Li = 35µH 4-wire Modbus RS485 (option b = R): Supply: Ui / Vmax = 30 V; Ii / Imax = 100 mA; Pi / Pmax = 650 mW; Ci = 10nF; Li = 20µH RS485-Fieldbus: Ui / Vmax = 4.2 V; Ii / Imax = 4.8A; Uo / Uoc = 4.2 V; Io / Isc = 149mA; Ci = 97uF; Li = 0nH; Cable Inductance : 0.8uH/m; Cable Capacitance : 45pF/m
Installation Drawing	Nonincendive Field Wiring, when installed per drawing XA01445F
Conditions of Acceptability	1. Because of the risk of discharge the non-metallic parts of the equipment and of all non-metallic accessories must be protected from electrostatic charging during installation and operation. The optional horn extension antenna must be arranged in such a way that it cannot have contact to a flowing medium. If the optional horn extension is mounted in an accessible position it must be protected from electrostatic charging (e.g. only wipe with damp cloth and do not expose to high voltage fields). 2. The end user shall ensure appropriate earthing of the metallic NPT adapter and all metallic accessories upon installation. 3. If the accessory RIA15 (option hh=R5) is connected to the FMR20 liquid level sensor, the RIA15 must not be supplied by its original supply parameters but with the supply parameters of the FMR20 liquid level sensor (Ui / Vmax = 30 V, Ii / Imax = 100 mA, Pi / Pmax = 750 mW) and the supply must be suitable to be connected to the accumulated internal capacitance (Ci) and inductance (Li) of the FMR20 liquid level sensor and the accessory RIA15.

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations
CLASS 2258 82 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations - CERTIFIED TO U.S. STANDARDS

Class I, Division 2, Groups A, B, C, D; T4…T1

Product	Microwave liquid level sensors Micropilot **FMR20-CC**bccdddeeef+gghhii Where b (output) = A, P, R cc (antenna) = BM, BN, CN ddd (process connection, rear) = VCE eee (process connection, front) = RPF, RRF, RSF, VEE, VFE, WFE, WGE f (cable length) = 1, 2, 3 gg (service) = alphanumeric characters (not relevant for safety) hh (flange accessory) = alphanumeric characters (option hh = R5 is not permitted when output "b" = R) ii (tagging) = alphanumeric characters (not relevant for safety)
Electrical Rating	10.5-30 Vdc, 4-20 mA (2-wire) 5-30 Vdc, 100 mW (4-wire, Modbus RS485)
Enclosure Rating	Type 6P; IP68
Temp. code and ambient temperature	T4…T1 -40 °C ≤ Tamb ≤ +80 °C
Process temperature and MWP	Max process temperature: + 80°C Maximum Working Pressure (MWP): 0.8 to 1.1 bar / 11.60 to 15.95 psi
Installation Drawing	XA01445F
Conditions of Acceptability	1. The end user shall ensure appropriate earthing of the metallic NPT adapter and all metallic accessories upon installation. 2. For option hh=R5, RIA15 must be installed in the non-hazardous area. 3. The FMR20 sensor shall be supplied by Class 2 or limited energy source only in accordance with CSA/UL 61010-1-12.

CLASS 2252 06 - PROCESS CONTROL EQUIPMENT
CLASS 2252 86 - PROCESS CONTROL EQUIPMENT – CERTIFIED TO U.S. STANDARDS

Product	Microwave liquid level sensors Micropilot **FMR10-CAQBM**dddeee**2**+gghh Where ddd (process connection, rear) = VCE, WDE eee (process connection, front) = VEE, WFE gg (service) = alphanumeric characters (not relevant for safety) hh (flange accessory) = alphanumeric characters (not relevant for safety)
Electrical Rating	10.5-30 Vdc, 4-20 mA (2-wire) 5-30 Vdc, 100 mW (4-wire, Modbus RS485)
Enclosure Rating	Type 4X; IP66
Ambient temperature	-40 °C ≤ Tamb ≤ +60 °C
Process temperature and MWP	Max process temperature: + 60°C Maximum Working Pressure (MWP): 3 bar / 43 psi
Conditions of Acceptability	1. The equipment shall be supplied by a certified limited energy power source which is approved in accordance to CSA/UL 60950-1 or CSA/UL 61010-1.

Product	Microwave liquid level sensors Micropilot **FMR20-CA**bccdddeeef+gghhii Where b (output) = A, P, R cc (antenna) = BM, BN, CN ddd (process connection, rear) = VCE, WDE eee (process connection, front) = RPF, RRF, RSF, VEE, VFE, WFE, WGE f (cable length) = 1, 2, 3, A, 8 (300m max.) gg (service) = alphanumeric characters (not relevant for safety) hh (flange accessory) = alphanumeric characters (option hh = R5 is not permitted when output "b" = R) ii (tagging) = alphanumeric characters (not relevant for safety)
Electrical Rating	10.5-30 Vdc, 4-20 mA (2-wire) 5-30 Vdc, 100 mW (4-wire, Modbus RS485)
Enclosure Rating	Type 6P; IP68
Ambient temperature	-40 °C ≤ Tamb ≤ +80 °C
Process temperature and MWP	Max process temperature: + 80°C Maximum Working Pressure (MWP): 3 bar / 43 psi
Conditions of Acceptability	1. The equipment shall be supplied by a certified limited energy power source which is approved in accordance to CSA/UL 60950-1 or CSA/UL 61010-1.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-10	General Requirements – Canadian Electrical Code, Part II
CAN/CSA C22.2 No. 61010-1-12	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements - Third Edition
CAN/CSA-C22.2 No. 60079-0:19	Explosive Atmospheres - Part 0: Equipment – General requirements
CAN/CSA-C22.2 No. 60079-11:14	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
ANSI/UL 61010-1:12 *Third Edition*	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use - Part 1: General Requirements
ANSI/UL 60079-0-2020, *Seventh Edition*	Explosive Atmospheres - Part 0: Equipment – General requirements
ANSI/UL 60079-11:14 *Sixth Edition*	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
CAN/CSA C22.2 No. 213-17	Non-incendive Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations
ANSI/UL 121201-2017 *Ninth Edition*	Non-incendive Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations

Supplement to Certificate of Compliance

Certificate: 70105943 **Master Contract:** 151079

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
80138828	2022-10-14	Evaluation to update cCSAus report # 70105943 (last project 80090751) for Class I, Division 1 and Zone 0 intrinsically safe or Class I, Division 2 non-incendive protected Microwave liquid level sensors Micropilot FMR20 Series or ordinary locations Micropilot FMR10 Series for addition of intrinsically safe control drawing used for ML reports.
80090751	2021-10-26	Update CSA report 70105943 for Micropilot series FMR20 for the following changes: Update of non-safety components due to obsolescence of existing components; Update standard CSA/UL 60079-0 to latest edition in the applicable requirements list; Update drawings for the above changes.
80035009	2020-05-19	Update CSA report 70105943 for the following modifications: Add an option WFE & WGE for order code “eee” to include additional thread types and define the order codes in generalized tabular format in product listing; Addition of ordinary location class 2252 06 and 2252 86; Addition of class 2258 03 and 2258 83 to separate out the NIFW model from class 2258 04/84; Update of documentation for minor corrections.
70218068	2019-09-18	Update CSA report 70105943 to assess the following modifications for Micropilot FMR20 sensor for use in Class 1, Div 1 and Class I, Div. 2, Grps A-D, T4 based on NIFW or Class I, Div 2 wiring method - New I/O variant MODBUS (4 –wire cable); Hardware changes to RF board ; Hardware changes to HART main board
70208468	2019-06-11	Update CSA report 70105943 to assess the Micropilot FMR20 sensor for Class I, Division 2 location. Revise the product marking to include Cl.I, Div. 2, Grps A-D, T4. Product ratings: Vmax 30V, Imax 100mA, Pmax 750mW. -40 °C ≤ Tamb ≤ +80 °C
70105943	2017-01-11	cCSAus certification for the type FMR20 DN40 and DN80 liquid level sensor.