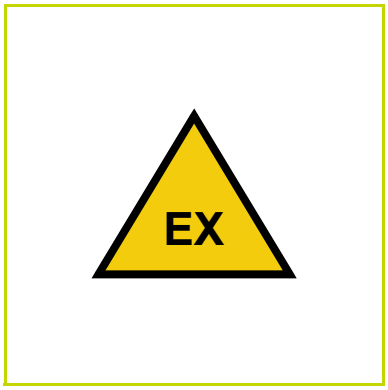
EX CERTIFICATE – cCSAus

vibro-meter®

cCSAus 80084516
for
TQ9xx proximity sensors
and IQS9xx signal conditioners



Note: Although the Ex certificate may be included in more than one language, the liability of the notified body applies only on the text of the original copy of the certificate that it published.

Document reference cCSAus 80084516
Edition 1 – January 2022

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Certificate of Compliance

Certificate: 80084516 **Master Contract:** 175074

Project: 80084516 **Date Issued:** 2022-01-21

Issued To: **Meggitt SA**
Rte de Moncor 4
Villars-sur-Glane, Fribourg, 1752
Switzerland

Attention: Carlo Pellegrinelli

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: Hossein Saleh
Hossein Saleh

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

IS Class I, Division 1, Groups A, B, C, and D T6 or T5
Ex ia IIC T6 or T5 Ga
Class I, Zone 0, AEx ia IIC T6 or T5 Ga
Class II, Division 1, Groups E, F, and G T80°C…T115°C
Ex ia IIIC T80°C…T115°C Da
Zone 20, AEx ia IIIC T80°C…T115°C Da

The IQS 9** is a signal conditioner which is used in a proximity measurement system. The signal conditioner is composed of an aluminum enclosure, which houses an encapsulated printed circuit board, two terminal blocks "J1 and J2", one connector "J0" and with an optional clip for DIN rail. The signal conditioner can be power supplied with two configurations, either by 2 wire transmission (I/P) or 3 wire transmission (O/P).

Nomenclature for IQS 9**:

204-9ab-000-cde
ab: Conditioner Type
00 = Analog output
10 = 4-20mA output
11 to 99 = Other
cd: Customized version (special target material or mounting)
00 to 99
e: Minor modification number (FFF = Form Fit Function)
0 to 9 = (Each modification increases the number by 1)

IQS 9** type designation above will be completed by digits for example related to the measuring range and sensitivity, the total system length or whether the type of mounting.

Entity Parameter Values:

Terminal Block "J1" - 2 wire transmission (I/P): Ui/Vmax = 28V, Ii/Imax = 100mA, Pi = 700mW, Ci = 2.2nF, Li = 4.96uH
Terminal Block "J1" - 3 wire transmission (O/P): Ui/Vmax = 28V, Ii/Imax = 100mA, Pi = 700mW, Ci = 4.4nF, Li = 9.92uH
Terminal Block "J2" - Raw O/P: Uo/Voc = 28V, Io/Isc = 4.57mA, Po = 32mW, Co/Ca = 82nF, Lo/La = 15mH
Terminal Block "J2" - Test I/P: Uo/Voc = 28V, Io/Isc = 0.057mA, Po = 0.4mW, Co/Ca = 82nF, Lo/La = 15mH
Connector "J0" - Sensor I/P: Uo/Voc = 28V, Io/Isc = 53.2mA, Po = 372.4mW, Co/Ca = 82.4nF, Lo/La = 12.5mH

Thermal Ratings:

Gas: T6 for Tamb: -40°C to +70°C; T5 for Tamb: -40°C to +85°C
Dust: T80°C for Tamb: -40°C to +50°C; T95°C for Tamb: -40°C to +65°C; T115°C for Tamb: -40°C to +85°C

Notes:

1. The above model is fixed connection, Pollution Degree 2, Installation/Overvoltage Category I.
2. Mode of operation: Continuous.
3. Environmental Conditions: Extended, -40°C to +85°C, RH% of 0-95% (non-condensing), altitude up to 4000m, Indoor use.

Conditions of Acceptability:

1. The signal conditioner must only be connected to galvanically isolated associated intrinsically safe apparatus or simple apparatus. This combination must be compatible with the intrinsic safety rules according to requirements of CSA/UL 60079-25 standards.
2. Temperature code of the signal conditioner depending on the ambient operating temperature range: Gas - T6 for Tamb: -40°C to +70°C; T5 for Tamb: -40°C to +85°C.

Dust - T80°C for Tamb: -40°C to +50°C; T95°C for Tamb: -40°C to +65°C; T115°C for Tamb: -40°C to +85°C.

3. The enclosure of the signal conditioner is made of aluminum. It must be mounted in such a manner as to eliminate the risk of sparks caused by impact or friction.
4. The signal conditioner must be installed per Wiring Diagram PZ 9196.
5. The final installation of the signal conditioner shall meet the requirements of CEC Part I (for Canada) and NEC (for USA) for wiring method in Class I/II, Division 1 and Class I, Zone 0 or Zone 20 and is subject to acceptance of local authority having jurisdiction.
6. End-use shall ensure the signal conditioner is properly connected to Earth upon installation.

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT – For Hazardous Locations
CLASS 2258 82 - PROCESS CONTROL EQUIPMENT – For Hazardous Locations - Certified to US Standards

TQ 9** Proximity Sensor:
Class I, Division 2, Groups A, B, C, and D T6…T3
Ex ec IIC T6…T3 Gc
Class I, Zone 2, AEx ec IIC T6…T3 Gc

IQS 9** Signal Conditioner:
Class I, Division 2, Groups A, B, C, and D T6…T5
Ex ec IIC T6…T5 Gc
Class I, Zone 2, AEx ec IIC T6…T5 Gc

The TQ 9** proximity sensor and the IQS 9** signal conditioner are part of a proximity measurement system. The system can also include an EA 9** extension cable which is not covered by this certificate. The proximity system allows a contactless measurement of the relative displacement of moving machine elements such as the shaft. The system output voltage or current is proportional to the distance between the sensor head and the metallic target.
The TQ 9** sensor has an integral coaxial cable, terminated with a self-locking miniature coaxial connector. Its active part comprises of a coil of wire that is molded inside the sensor head made of a thermoplastic material. The sensor body is made of stainless steel.
The IQS 9** signal conditioner contains a high-frequency modulator/demodulator that supplies the driving signal to the coil of the sensor. This generates an electromagnetic field in the sensor head, which then induces eddy currents into the metallic target. When the target moves, the eddy currents change, which causes a change in the electrical characteristics of the TQ 9** that the signal conditioner converts into a signal that is proportional to the distance to the target. The electronics of the conditioner is mounted in a metallic housing and it is totally embedded into a silicone casting compound.
The signal conditioner has a coaxial connector for the connection to the proximity sensor. The output of the IQS 9** conditioner can be configured as a current (2-wire transmission mode) or a voltage signal (3-wire transmission mode). For test purposes, the IQS 9** includes a "raw" voltage output signal and a test input signal that allow the measurement chain/system operation to be tested in situ.

Nomenclature for TQ 9** Proximity Sensor:

111-9ab-000-cde

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a: Housing Type (straight, reverse, right-angle 90° or customized)
0 to 9
b: Dimension of the measurement element (Sensor tip)
1 = Diameter 5mm nominal
2 = Diameter 8mm nominal
3 = Diameter 18mm nominal
4 to 9 = Other dimensions
cd: Cable, cable protection and protection sheath types (according to customers applications)
00 to 99
e: Minor modification number (FFF = Form Fit Function)
0 to 9 = (Each modification increases the number by 1)

TQ 9** type designation above will be completed by digits for example related to the thread type of sensor body, the body length, the integral cable length or whether the total system length.

Nomenclature for IQS 9** Signal Conditioner:

204-9ab-000-cde
ab = Conditioner type
00 = Analog output
10 = 4-20mA output
11 to 99 = Other
cd: Customized version (special target material or mounting)
00 to 99
e: Minor modification number (FFF = Form Fit Function)
0 to 9 = (Each modification increases the number by 1)

IQS 9** type designation above will be completed by digits for example related to the measuring range and sensitivity, the total system length or whether the type of mounting.

Electrical Ratings:

IQS 9** Signal Conditioner, 2-wire transmission mode (output current signal): Vmax = 30Vdc, Imax = 22mA, Pmax = 0.7W
IQS 9** Signal Conditioner, 3-wire transmission mode (output voltage signal): Vmax = 30Vdc, Imax = 9.5mA, Pmax = 0.3W

Thermal Ratings:

TQ 9** Proximity Sensor: T6 for Tamb: -40°C to +75°C; T5 for Tamb: -40°C to +90°C; T4 for Tamb: - 40°C to +125°C; T3 for Tamb: - 40°C to +180°C
IQS 9** Signal Conditioner: T6 for Tamb: -40°C to +70°C; T5 for Tamb: -40°C to +85°C

Notes:

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1. The above model is fixed connection, Pollution Degree 2, Installation/Overvoltage Category I.
2. Mode of operation: Continuous.
3. Environmental Conditions: Extended, Indoor use, -40°C to +85°C, altitude up to 4000m, RH% of 0-95% (non-condensing).

Conditions of Acceptability:

1. To be supplied by a Class 2 or limited-energy source on the signal side according to CSA 61010-1-12/UL 61010-1 3rd Edition.
2. Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the IQS9** signal conditioner.
3. The equipment shall be used in an area of not more than pollution degree 2 as defined in IEC 60664-1.
4. For Zone 2 application, this device (IQS 9**) shall be installed within a fixed end-use enclosure that provides a degree of protection not less than IP54 according to CSA/UL 60079-0 and CSA/UL 60079-7. The suitability of the enclosure is subject to acceptance by the local authorities having jurisdiction at the time of installation.
5. For Division 2 application, this device (IQS 9**) shall be installed within a fixed end-use enclosure that provides a degree of protection Type 4. The suitability of the enclosure is subject to acceptance by the local authorities having jurisdiction at the time of installation.
6. The signal conditioner and the proximity sensor must be installed per Wiring Diagram PZ 9189.
7. The final enclosure must bear the following warning marking both in French and English: “Do not connect or disconnect when an explosive atmosphere is present”.
8. The sensor head shall be protected against any risk of mechanical danger.
9. The TQ 9** sensor cable shall be installed within metallic conduit per requirements of CEC Part I and NEC.
10. When extension cable EA 9** is used as part of the system, it shall be installed within metallic conduit as defined in the CEC Part I and NEC. The interconnection between the EA 9** and TQ 9** must be installed within an enclosure or junction box with IP54 rating for Zone 2, and with an enclosure or junction box with Type 4 rating for Class I, Division 2 hazardous location.
11. The final installation of the device shall meet the requirements of CEC Part I (for Canada) and NEC (for USA) for wiring method in Division 2 and Zone 2 and is subject to acceptance of local authority having jurisdiction.
12. End-user shall ensure proper earthing of the device upon installation.

APPLICABLE REQUIREMENTS

CAN/CSA C22.2 No. 61010-1-12, UPD1: 2015, UPD2: 2016, AMD1: 2018	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
CSA C22.2 No. 213-17	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
CAN/CSA-C22.2 No. 60079-0:19	Explosive Atmospheres - Part 0: Equipment - General requirements
CAN/CSA-C22.2 No. 60079-7:16	Explosive Atmospheres - Part 7: Equipment protection by increased safety “e”
CAN/CSA-C22.2 No. 60079-11:14 (R2018)	Explosive Atmospheres - Part 11: Equipment protection by intrinsic safety "i"

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UL 61010-1, 3rd edition (2012), AMD1: 2018	Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirement
ANSI/UL 121201-2017 Ninth Edition	Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
ANSI/UL 913 Eighth Edition (R2019)	Intrinsically Safe and Associated Apparatus For Use In Class I, II, and III, Division 1, Hazardous (Classified) Locations
ANSI/UL 60079-0:19	Explosive Atmospheres - Part 0: Equipment - General requirements
ANSI/UL 60079-7:17	Explosive Atmospheres - Part 7: Equipment protection by increased safety “e”
ANSI/UL 60079-11:2018	Explosive Atmospheres - Part 11: Equipment protection by intrinsic safety "i"

MARKINGS

Refer to MARKINGS section of Descriptive Report 80084516.

Notes:

Products certified under Class C225802, C225804, C225882, C225884 have been certified under CSA’s ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC).
www.scc.ca

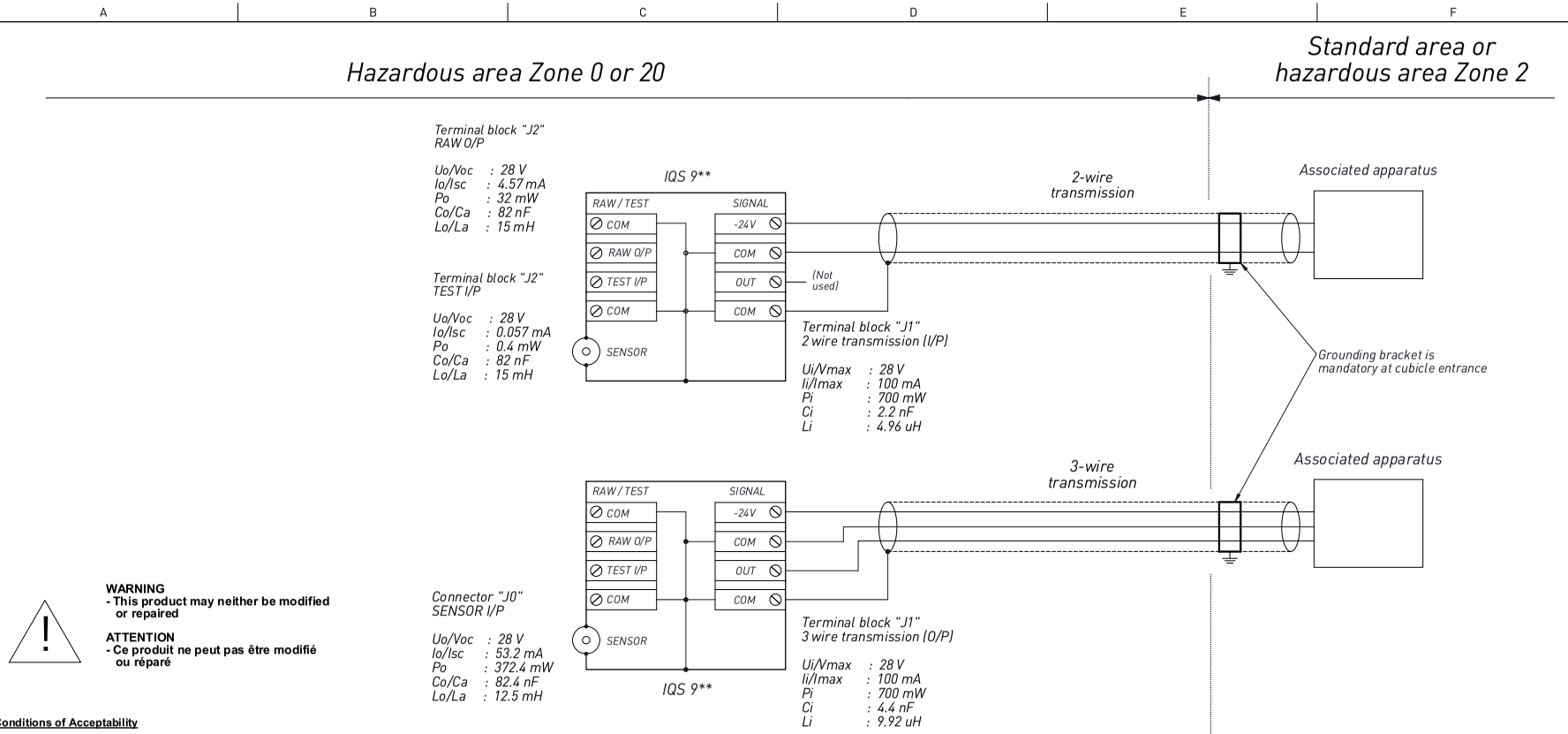
Supplement to Certificate of Compliance

Certificate: 80084516 **Master Contract:** 175074

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
80084516	2022-01-21	Original cCSAus certification of intrinsically safe "ia" and increased safety "ec" protected IQS 9** Signal Conditioner and increased safety "ec" protected TQ 9** Proximity Sensor.



WARNING
- This product may neither be modified or repaired

ATTENTION
- Ce produit ne peut pas être modifié ou réparé

Conditions of Acceptability

1. The apparatus must only be connected to galvanically isolated associated intrinsically safe apparatus or simple apparatus. This combination must be compatible with the intrinsic safety rules according to requirements of CSA/UL 60079-25 standards.
2. Temperature code of the signal conditioner depending on the ambient operating temperature range:
   Gas - T6 for Tamb: -40°C to +70°C; T5 for Tamb: -40°C to +85°C.
   Dust - T80°C for Tamb: -40°C to +50°C; T95°C for Tamb: -40°C to +65°C; T115°C for Tamb: -40°C to +85°C.
3. The enclosure of the signal conditioner is made of aluminum. It must be mounted in such a manner as to eliminate the risk of sparks caused by impact or friction.
4. The apparatus must be installed per Wiring Diagram PZ 9196.
5. The final installation of the device shall meet the requirements of CEC (for Canada) and NEC (for USA) for wiring method in Class I/II, Division 1 and Class I, Zone 0 or Zone 20 and is subject to acceptance of local authority having jurisdiction.
6. End-use shall ensure the device is properly connected to Earth upon installation.

Environmental conditions

- Pollution degree	: 2
- Installation category	: Cat I
- Altitude	: 4000m max
- Humidity	: 95% max non-condensing
- Electrical supply voltage fluctuation	: -18VDC to -30VDC
- Outdoor use statement	: Indoor use
- Temperature range signal conditioner	: -40°C to +85°C

- Warning : This product may neither be modified or repaired.
- The product is intended to be used with certified safety barrier.
- To insure an installation conform with an explosive environment, it is crucial to respect the criteria mentioned into the corresponding Ex certificates.
- Coordinates to obtain technial assistance provided:
  Meggitt SA / Route de Moncor 4 / 1752 Villars-sur-Glâne / Switzerland / Phone +41 26 407 11 11

GAS ENVIRONMENT

CSA21CA80084516X
175074

IS Class I, Division 1, Groups A, B, C, and D T6 or T5
Ex ia IIC T6 or T5 Ga
Class I, Zone 0, AEx ia IIC T6 or T5 Ga

T6 for +70°C
T5 for +85°C

-40°C ≤ Tamb ≤ +85°C

DUST ENVIRONMENT

CSA21CA80084516X
175074

Class II, Division 1, Groups E, F, and G T80°C...T115°C
Ex ia IIIC T80°C...T115°C Da
Zone 20, AEx ia IIIC T80°C...T115°C Da

T80°C for +50°C
T95°C for +65°C
T115°C for +85°C

-40°C ≤ Tamb ≤ +85°C

Note

1. *Choose associated apparatus and intrinsically safe devices such that the following conditions are met :*

   $U_0 < 28V$
   $I_0 < 100mA$

2. *Ex ia is defined as intrinsically safe.*
3. *Install associated apparatus in accordance with manufacturers instructions.*

NO CHANGES ALLOWED WITHOUT REFERENCE TO THE NOTIFIED BODY

Rev.	Date	Change N°	Drawn	Appr.	Description

MFR S3960	MSS-CAD	MEGGiTT	
Scale	Format A2	Meggitt SA Rte de Moncor 4, CH-1752 Villars-sur-Glâne, Switzerland	

Material:	Repl.by:	Repl.for:
	Radius/ Chamfers [mm]	Tol. on angle [°]

Linear Tolerances (mm)

	> 0,5 ... 3	> 3 ... 6	> 6 ... 30	> 30 ... 120	> 120 ... 400	> 400 ... 1000	> 1000 ... 2000	> 2000 ... 4000
	-	-	-	-	-	-	-	-

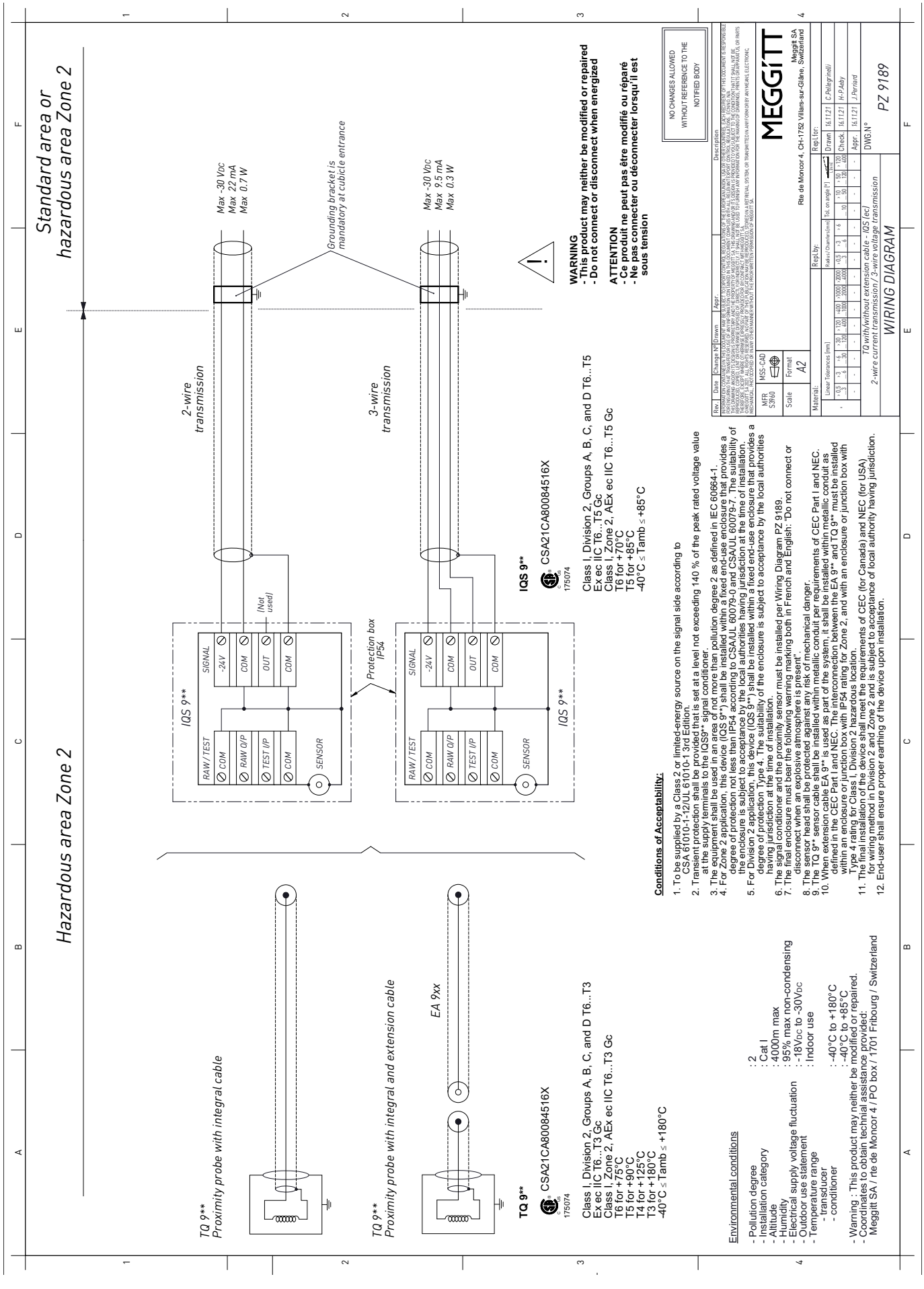
	> 0,5 ... 3	> 3 ... 6	> 6 ... 30
	-	-	-

	... 10	> 10 ... 50	> 50 ... 120	> 120 ... 400
	-	-	-	-

Drawn	04.11.21	C.Pellegrinelli	
Check.	04.11.21	H-P.Aeby	
Appr.	04.11.21	P.Kornatko	

IQS 90x (ia)
WIRING DIAGRAM

DWG.N°
PZ 9196


Standard area or hazardous area Zone 2
Hazardous area Zone 2
TQ 9**
Proximity probe with integral cable
TQ 9**
Proximity probe with integral and extension cable
EA 9xx
TQ 9**
CSA21CA80084516X
175074
Class I, Division 2, Groups A, B, C, and D T6...T3
Ex ec IIC T6...T3 Gc
Class I, Zone 2, AEx ec IIC T6...T3 Gc
T6 for +75°C
T5 for +90°C
T4 for +125°C
T3 for +180°C
-40°C ≤ Tamb ≤ +180°C
2-wire transmission
3-wire transmission
Max -30 Vdc
Max 22 mA
Max 0.7 W
Max -30 Vdc
Max 9.5 mA
Max 0.3 W
Grounding bracket is mandatory at cubicle entrance
Protection box IP54
IQS 9**
RAW / TEST
SIGNAL
-24V
COM
RAW Q/P
TEST I/P
OUT
(Not used)
SENSOR
IQS 9**
CSA21CA80084516X
175074
Class I, Division 2, Groups A, B, C, and D T6...T5
Ex ec IIC T6...T5 Gc
Class I, Zone 2, AEx ec IIC T6...T5 Gc
T6 for +70°C
T5 for +85°C
-40°C ≤ Tamb ≤ +85°C
WARNING
- This product may neither be modified or repaired
- Do not connect or disconnect when energized
ATTENTION
- Ce produit ne peut pas être modifié ou réparé
- Ne pas connecter ou déconnecter lorsqu'il est sous tension
Conditions of Acceptability:
1. To be supplied by a Class 2 or limited-energy source on the signal side according to CSA 61010-1-12/UL 61010-1 3rd Edition.
2. Transient protection shall be provided that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the IQS9** signal conditioner.
3. The equipment shall be used in an area of not more than pollution degree 2 as defined in IEC 60664-1.
4. For Zone 2 application, this device (IQS 9**) shall be installed within a fixed end-use enclosure that provides a degree of protection not less than IP54 according to CSA/UL 60079-0 and CSA/UL 60079-7. The suitability of the enclosure is subject to acceptance by the local authorities having jurisdiction at the time of installation.
5. For Division 2 application, this device (IQS 9**) shall be installed within a fixed end-use enclosure that provides a degree of protection Type 4. The suitability of the enclosure is subject to acceptance by the local authorities having jurisdiction at the time of installation.
6. The signal conditioner and the proximity sensor must be installed per Wiring Diagram PZ 9189.
7. The final enclosure must bear the following warning marking both in French and English: "Do not connect or disconnect when an explosive atmosphere is present".
8. The sensor head shall be protected against any risk of mechanical danger.
9. The TQ 9** sensor cable shall be installed within metallic conduit per requirements of CEC Part I and NEC.
10. When extension cable EA 9** is used as part of the system, it shall be installed within metallic conduit as defined in the CEC Part I and NEC. The interconnection between the EA 9** and TQ 9** must be installed within an enclosure or junction box with IP54 rating for Zone 2, and with an enclosure or junction box with Type 4 rating for Class I, Division 2 hazardous location.
11. The final installation of the device shall meet the requirements of CEC (for Canada) and NEC (for USA) for wiring method in Division 2 and Zone 2 and is subject to acceptance of local authority having jurisdiction.
12. End-user shall ensure proper earthing of the device upon installation.
Environmental conditions
- Pollution degree : 2
- Installation category : Cat I
- Altitude : 4000m max
- Humidity : 95% max non-condensing
- Electrical supply voltage fluctuation : -18Vdc to -30Vdc
- Outdoor use statement : Indoor use
- Temperature range
- transducer : -40°C to +180°C
- conditioner : -40°C to +85°C
- Warning : This product may neither be modified or repaired.
- Coordinates to obtain technial assistance provided:
Meggitt SA / rte de Moncor 4 / PO box / 1701 Fribourg / Switzerland
NO CHANGES ALLOWED WITHOUT REFERENCE TO THE NOTIFIED BODY
Rev | Date | Change N° | Drawn | Appr | Description
MFR. S/N 60
MSS-CAD
Scale
Format
A2
Material:
Repl.by:
Repl.for:
Linear Tolerances [mm]
Radius/Chamfers [mm]
Tol. on angle 1°
Drawn | 16.11.21 | C.Pellegrinelli
Check. | 16.11.21 | H-P.Ably
Appr. | 16.11.21 | J.Perrard
TQ with/without extension cable - IQS (ec)
2-wire current transmission / 3-wire voltage transmission
WIRING DIAGRAM
DWG.N°
PZ 9189
MEGGITT
Meggitt SA
Rte de Moncor 4, CH-1752 Villars-sur-Glâne, Switzerland