IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx QPS 20.0008X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2024-03-07) Issue 0 (2020-06-08)
Date of Issue:	2024-08-14		
Applicant:	**Daily Thermetrics Corporation** 9600 W. Gulf Bank Road Houston, TX 77040 **United States of America**		
Equipment:	**Industrial Sensor Assembly 360HZ Series**		
Optional accessory:			
Type of Protection:	**"db", "eb"**		
Marking:	Ex db eb IIC T6/T5/T4 Gb Tamb = -40 °C to +60/75/80 °C Umax = 42.4 V dc SELV or PELV “See IOM for process temperature and pressure limits.” “T-Class dependence on the process temperature and lagging distance from a defined T_{amb} is given in IOM.”		

Approved for issue on behalf of the IECEx Certification Body: **D. Adams, P. Eng.**

Position: **Manager, Ex (Hazardous Locations) Department**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

QPS
Evaluation Services Inc.
81 Kelfield St
Unit 8
Toronto, Ontario M9W 5A3
Canada

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Certificate No.: **IECEx QPS 20.0008X**

Date of issue: 2024-08-14 Issue No: 2

Manufacturer: **Daily Thermetrics Corporation**
9600 W. Gulf Bank Road
Houston, TX 77040
United States of America

Manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

CA/QPS/ExTR20.0014/00 CA/QPS/ExTR20.0014/01 CA/QPS/ExTR20.0014/02

Quality Assessment Reports:

US/UL/QAR11.0003/08 US/UL/QAR11.0003/09

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Industrial Sensor Assembly 360HZ Series consists of parts and components as follow:

- Base TC or RTD Probe, manufactured by Daily Thermetrics Corp., Model 220HZ or CT221HZ, IECEx QPS 19.0023U; Ex eb IIC Gb, Umax = 30 V dc, IEC 60079-0:2017 / IEC 60079-7:2015;

- Connection Enclosure that can be:

either

a) Pushna International Inc. – USA, 1010, 1014, 1016 Series Housings;

IECEx FMG 11.0029U; Ex d IIC Gb / Ex tb IIIC Db; IEC 60079-0:2007 / IEC 60079-1:2007 / IEC 60079-31:2008,

or

b) Limatherm S.A. – Poland, Connection head type XD-A** series;

IECEx FTZU 14.0003U; Ex d IIC Gb / Ex tb IIIC Db; IEC 60079-0:2011 / IEC 60079-1:2014 / IEC 60079-31:2013,

or

c) International Metal Engineering Pte Limited – Singapore, Series 1080 Instrument Housings;

IECEx SIR 09.0006U; Ex db IIC Gb / Ex tb IIIC Db IP68, Ta = -40 °C to +85 °C; IEC 60079-0:2011 / IEC 60079-1:2014 / IEC 60079-31:2013.

- Transmitter, if used, can be of make and model as follow:

a) Rosemount Inc., model 248; IECEx BAS 07.0086X, Ex ia IIC T5/T6 Ga;

b) Rosemount Inc., model 644; IECEx BAS 12.0069X, Ex ia IIC T6/T5/T4 Ga;

c) PR Electronics A/S, model 5337; IECEx KEM 10.0083X, Ex ia IIC T6/T5/T4 Ga.

NOTE: Transmitters are here only functional elements, and not protective in terms of explosion protection.

..... continuation on page 4

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Grounded junctions are not capable of withstanding the 500 V rms between the measurement circuit and ground. This must be taken into account during installation.
2. Industrial Sensor Assembly 360HZ Series must be either connected to a SELV or PELV system, or directly connected to an apparatus compliant with IEC 60950 series, IEC 610101-1, or equivalent.
3. The assembly is tagged with design pressure and temperature. These values shall not be exceeded. Specifically, during normal operation, the maximum operating temperatures of any component of the sensor assembly must not exceed the designed temperature indicated on the product. The probe must not be exposed to a pressure higher than indicated on the product.
4. The cable glands as well as the supply cables must be properly selected to suit the final application of the assembly and/or to maintain the protection method marked thereon.
5. For an ambient conditions over 70 °C and up to 80 °C, a cable with thermostabilty of its insulation of minimum 80 °C / 90 °C shall be used. Special attention shall be given to the source of heating the equipment is intended to be attached to, because it can contribute such to elevate the local ambient temperature for the cable. The end user shall read and follow the User Manual where this concern is given them to attention.
6. In the case when a generic enclosure model is used (different from the listed connection enclosure models), the equipment must be assembled with a certified 'Ex db IIC' enclosure, approved to the edition(s) of standard(s) that are, at the time of placing the assembly on the market, currently in use. The enclosure shall be of simple geometry and with a volume < 500 cm^3.
7. Product rating is given on the marking plate of each individual assembly as well as in the IOM and shall be respected

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Equipment (continued):

- Terminal block are of ordinary location type constructed from ceramic, porcelain, or Bakelite.

- Cable Glands of manufacturer and model as follow:

VARIANT 1:

a) OSCG Co. Ltd. – Republic of Korea, Compound Cable Glands, model OS-EXBF;

IECEx PRE 18.0074X, Ex db IIC Gb / Ex tb IIIC Db, Service temp.= -60°C to +110°C; IEC 60079-0:2017 / IEC 60079-1:2014 / IEC 60079-31:2013

b) CMP Products Ltd. – United Kingdom, TMCX Range of Cable Glands;

IECEx CML 18.0184X, Ex db IIC Gb (TMCX only) / Ex ta IIIC Da, Service temp.= -60°C to +85°C; IEC 60079-0:2017 / IEC 60079-1:2014 / IEC 60079-31:2013;

c) CMP Products Ltd. – United Kingdom, TMC2X Range of Cable Glands

IECEx CML 18.0193X, Ex db IIC Gb / Ex ta IIIC Da, Service temp.= -60°C to +85°C; IEC 60079-0:2017 / IEC 60079-1:2014 / IEC 60079-31:2013

VARIANT 2:

a) OSCG Co. Ltd. – Republic of Korea, Cable Glands for Non-Armoured & Braided Cables, model: OS-A2F-U;

IECEx PRE 17.0062X, Ex db IIC Gb / Ex tb IIIC Db, Service temp.= -60°C to +110°C; IEC 60079-0:2011 / IEC 60079-1:2014 / IEC 60079-31:2013;

b) OSCG Co. Ltd. – Republic of Korea, Cable Glands for Non-Armoured & Braided Cables, model: OS-A2F-UD;

IECEx PRE 17.0062X, Ex db IIC Gb / Ex eb IIC Gb / Ex tb IIIC Db, Service temp.= -60°C to +110°C; IEC 60079-0:2011 / IEC 60079-1:2014 / IEC 60079-31:2013;

c) CMP Products Ltd. – United Kingdom, Cable Glands Types A**

IECEx SIR 13.0023X, Ex d IIC Gb / Ex ta IIIC Da, Service temp.= -60°C to +130°C (outer sheath seal material: EPDM 70 (black colour)); IEC 60079-0:2011 / IEC 60079-1:2007 / IEC 60079-31:2008

- An optional thermowell.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Update the IOM with new applicant address.
- Update the applicant address in the certificate, and Marking labels.

Annex:

X1427-4-Annex 1.pdf

ANNEX 1, Date: 2024-8-12

Certificate No.: IECEx QPS 20.0008X Issue No.: 2

Applicant:

Daily Thermetrics Corporation
9600 W Gulf Bank Rd,
Houston, TX
77040. USA

Electrical Apparatus: **Industrial Sensor Assembly 360HZ Series**

Model nomenclature for the Industrial Sensor Assembly 360HZ Series is as follows:

A	-	B	C	D	E	-	F	G	H	-	I	J	K	L	-	M	-	N	-	O	P	Q	R	S	T	U	V	-	W

where

A	Model
360HZ	360HZ

F	Type of lead wire
1	Solid – 24 AWG
2	Solid – 20 AWG
3	Solid – 18 AWG
4	Stranded – 24 AWG
5	Stranded – 22 AWG
6	Stranded – 20 AWG

P	Sensor type
1	Single thermocouple
2	Duplex thermocouple
3	Triplex thermocouple
A	2-wire RTD - single
B	3-wire RTD - single
C	4-wire RTD - single
D	2-wire RTD - duplex
E	3-wire RTD - duplex
F	4-wire RTD - duplex

B	Connection Enclosure
1	Pushna International Inc., Housing, model 1010P, cast aluminium
2	Pushna International Inc., Housing, model 1014P, 304 stainless steel
3	Pushna International Inc., Housing, model 1016P, 316 stainless steel
4	Limatherm S.A., Connection head, model XD-AD, cast aluminium
5	International Metal Engineering 1080 low copper aluminum

C	Terminal block
1	Phoenix Contact – gray 3248030
2	Phoenix Contact – blue 3248031
3	Weidmuller – gray 1753280000
4	Weidmuller – blue 1754170000
5	Industrial terminal block
6	Rosemount 248 transmitter
7	Rosemount 644 transmitter
8	PR Electronics 5337 transmitter

G	Flexible conduit length
FC36	36”
FCXX	Custom length (inches)

H	Transition housing type
1	Housing with adapter
2	Housing without adapter
3	Flush housing

I	Instrument connection type
1	Compression fitting
2	Spring loaded fitting – SS
3	Spring loaded fitting – INC
4	Spring loaded self fitting - SS
5	Spring loaded self fitting - INC
6	Spring loaded comp fitting - SS
W	Welded to process connection

J	Instrument connection material
1	304SS
2	316SS
3	BRASS
N	None / welded

K	Instrument connection size
1	3/8” NPT
2	1/2” NPT
3	3/4” NPT
N	None / welded

Q	Upgrade to premium line
Y	Yes
N	No

T	Sensor sheath diameter
1	Ø 1/4” (6.3 mm)
2	Ø 5/16” (7.9 mm)
3	8.0 mm
4	Ø 3/8” (9.5 mm)

S	Accuracy
1	Standard limits - Thermocouple
2	Special limits - Thermocouple
A	Class A RTD
B	Class B RTD

R	Measuring junction
1	Grounded
2	Ungrounded
N	N/A – RTD

D	Conduit entry
1	¾" FNPT
2	½" FNPT
3	M20x1.5
4	2 x ¾" FNPT - Limatherm S.A. Connection head only
5	2 x ½" FNPT - Limatherm S.A. Connection head only
6	2 x M20x1.5 – Limatherm only

E	Cable gland
1	OSCG / EXBF
2	CMP / TMCX
3	CMP / TMC2X
4	OSCG / OS-A2F-U
5	OSCG / OS-A2F-UD
6	CMP / A2F

- Variant 1
- Variant 2

L	Vent hole for instrument connection
Y	Yes
N	No

N	C Dimension
C6	6"
C9	9"
CXX	Custom length (inches)
M	**M Dimension**
M6	6"
M9	9"
MXX	Custom length (inches)

O	Calibration type
K	Type K - thermocouple
J	Type J - thermocouple
E	Type E - thermocouple
T	Type T - thermocouple
S	Type S - thermocouple
R	Type R - thermocouple
B	Type B - thermocouple
N	Type N - thermocouple
H	100 Ω Alpha .00385 RTD

U	Sensor sheath material
304	304SS
304L	304L SS
316	316SS
316L	316L SS
310	310SS
321	321SS
347	347SS
446	446SS
I600	Inconel 600
I800	Incoloy 800
HASTX	Hastelloy X

V	Calibration options
1	Report not required
2	212°F (100°C) with certificate
3	212°F (100°C) with report
4	3-point calibration with report
5	5-point calibration with report

Industrial Sensor Assembly of 360HZ Series must be either connected to a SELV or PELV system, or directly connected to an apparatus compliant with IEC 60950 series, IEC 610101-1, or equivalent.

While thermocouples and RTDs are passive sensors that do not generate heat, they may transfer heat from process-wetted areas. Rated components such as the epoxy seal or insulation must remain below maximum allowable temperatures.
Proper lagging extension is determined by using maximum operating conditions, shown in Table 4 of DTC-IOM-360HZ-HAZLOC. The user may verify proper lagging extension via temperature measurement after installation, while no hazardous gas is present.

Epoxy End Seal Model and Manufacturer	Continuous Operating Temperature (COT)	Service Temperature Range	Minimum Distance from Provcess Temp (Tp) -40°F<Tp<572°F -40°C<Tp<300°C	Minimum Distance from Process Temp (Tp) -273°F<Tp<-40°F or 572°F<Tp<2100°F, -169°C<Tp<-40°C or 300°C<Tp<-1149°C
2651-40FR with Catalyst 9 by STYCAST	-40 °C to +150 °C	-40 °C to +110 °C	3.0 inch [76.2 mm]	10.0 inch [254.o mm]
EP1340 by RESINLAB	-40 °C to +150 °C	-40 °C to +130 °C	3.0 inch [76.2 mm]	10.0 inch [254.o mm]
EP1330 by RESINLAB	-40 °C to +150 °C	-40 °C to +130 °C	3.0 inch [76.2 mm]	10.0 inch [254.o mm]
Duralco 4703 by CONTRONICS Corp.	-40 °C to +343 °C	-40 °C to +130 °C	3.0 inch [76.2 mm]	10.0 inch [254.o mm]

Table 4 - Temperature Ratings for Epoxy End Seals

Extension/Lead Wire				
Size	Insulation Thickness	Insulation Material	COT	Services Temperature Range
16-24 AWG	0.20 mm	Teflon	-200°C to +200°C	-40°C to +130°C

Table 5 - Temperature Ratings for Non-Metallic Components

T_{code}	$T_{ambient}$	$T_{rise} + T_{ambient}$	°C Transferred from Process
T6	-40°C to +60°C	65°C	<20°C
T5	-40°C to +75°C	80°C	<20°C
T4	-40°C to +80°C	85°C	<50°C

Table 6 – Relationship between T-Code and Ambient Temperature & Temperature transferred from the process by the conduction