CERTIFICATE OF CONFORMITY

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM20US0033X**
3. **Equipment:**
   (Type Reference and Name)
   Model TRX Temperature Transmitter
   Model TRY Temperature Transmitter
   Model T2X Temperature Transmitter
   Model SIY Temperature Transmitter
4. **Name of Listing Company:** **Moore Industries International, Inc.**
5. **Address of Listing Company:** **16650 Schoenborn Street**
   North Hills, CA 91343
   USA
6. The examination and test results are recorded in confidential report number:

   3008479 dated 3rd October 2000
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2018, FM Class 3810:2018,
   ANSI/UL 60079-0:2019, ANSI/UL 60079-11:2014, ANSI/UL 121201:2017; ANSI/UL 61010-1:2016
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:

J. E. Marquedant
VP, Manager - Electrical Systems

18 August 2020
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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10. Equipment Ratings:

Intrinsically Safe (Entity) for use in Class I, Division 1, Groups A, B, C and D; Temperature Class T6; in accordance with Control Drawing No. 100-100-38, 100-100-49 or 100-100-60; Hazardous (Classified) Locations.

Class I, Zone 0 Group IIC; Temperature Class T6 in accordance with Control Drawings No. 100-100-38, 100-100-49 or 100-100-60; Explosive Atmospheres.

Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; Hazardous (Classified) Locations.

11. The marking of the equipment shall include:

TRX-ISF, T2X-ISF
Intrinsically Safe*:
Class I, Division 1, Groups A, B, C & D T6
Class I, Zone 0, AEx ia IIC T6 Ga
Op. Amb.: -40°C ≤ Tamb ≤ +60°C
Entity Parameters:
Ui = 30Vdc, Ii = 110mA, Pi = 825mW
* Install per I.S. Dwg 100-100-38

TRY-ISF
Intrinsically Safe*:
Class I, Division 1, Groups A, B, C & D T6
Class I, Zone 0, AEx ia IIC T6 Ga
Op. Amb.: -40°C ≤ Tamb ≤ +60°C
Entity Parameters:
Ui = 30Vdc, Ii = 110mA, Pi = 825mW
* Install per I.S. Dwg 100-100-49

SIY-ISF
Intrinsically Safe*:
Class I, Division 1, Groups A, B, C & D T6
Class I, Zone 0, AEx ia IIC T6 Ga
Op. Amb.: -40°C ≤ Tamb ≤ +60°C
Entity Parameters:
Ui = 30Vdc, Ii = 110mA, Pi = 825mW
* Install per I.S. Dwg 100-100-60

TRX, T2X, TRY, SIY
Nonincendive:
CL I, DIV 2, GRPS A, B, C & D T6
Op. Amb.: -40°C ≤ Tamb ≤ +60°C
TRX & T2X: 8-42Vdc, 24mA max
TRY & SIY: 10-42Vdc, 24mA max

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12. **Description of Equipment:**

General - The Models TRX, TRY, T2X, SIY are two wire 4-20mA power loop Temperature Transmitters. The transmitters receive input from various sensor configuration such as RTD, Thermocouple, mV, Ohms, Potentiometer. The electronics convert temperature to a 4-20mA signal.

Construction - The electronics of the TRX, TRY and SIY Temperature Transmitters are located inside of a polymeric hockey puck style housing. The housing for the Model TRX, TRY and SIY is approximately 2" in diameter and 0.9" in depth. The T2X housing is approximately 2" in diameter and 0.9" in depth.

The transmitters contain two screw terminals for power connection and four screw terminals for sensor connections. The housing, with the electronics, is completely filled with encapsulation material.

Ratings - For type of protection intrinsic safety, connections can only made by connecting Approved associated apparatus having entity parameters. The entity parameters of the Model TRX, TRY, T2X, SIY Temperature Transmitters are Ui = 30V, Ii = 110mA, Pi = 0.825W. The output parameters of the chosen associated apparatus output shall not exceed these parameters.

All other protection techniques, the electronic connection has the following values:
Model TRX and T2X Temperature Transmitters, 8-42VDC, 4-20mA
Model TRY and SIY Temperature Transmitters, 10-42DC, 4-20mA.

The "COM" port is used for programing of the TRX, TRY and SIY Temperature Transmitters only in the Unclassified location. The certified Moore Industries USB cable, Part Number 804-030-26, is required to be used for programming. The Moore Industries USB cable, Part Number 804-030-26, was certified under Project ID 3045718 and has output parameters of Uo = 8V and Io = 50mA.

The ambient temperature range of the Models TRX, TRY, T2X and SIY Transmitter is -40°C to +60°C

The Model SIY, TRX, TRY and T2X Transmitters shall be mounted within a tool-secured enclosure which meets the requirement of ANSI/UL 61010-1 and is capable of accepting applicable wiring methods per the NEC®. The final enclosure shall have a minimum type of protection IP20 but shall have a suitable degree of protection against deterioration of the equipment that would adversely affect its suitability for use in Class I, Division 1, Zone 0 or Division 2 locations.

TRX/a/4-20mA/b/-c [d]. Temperature Transmitter.
Install per Control Drawing No. 100-100-38;
Entity Parameters:
Ui= 30Vdc, Ui = 110mA, Pi = 825mW, Ci = 4.7nF, Li = 0.
RTD Sensor Terminals:
Uo = 6.51Vdc, Io = 110mA, Po = 716mW, Co = 2.26µF, Lo = 3mH.
a = Input J-, K-, E-, T-, R-, S-, N-, B-, RO-, MV-, R1-, R2-, R3-, R4-, R5-, R6-, R7-, R8-, R9-, R10-, R11-, R12-, R13-, R14-, R15-, R16-, R17-, R18-, R19-, R20-, R21-, R22-, R23-.
b = -ISF (Intrinsically Safe) or Blank (Nonincendive).
c = Housing HPP, HPPD, HPPDN, CCP, CH6, D-BOX, LH1, LH2.

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TRY/a/4-20mA/b/-c [d]. Temperature Transmitter.
Install per Control Drawing No. 100-100-49
Entity Parameters:
Ui = 30Vdc, Ii= 110mA, Pi = 825mW, Ci = 10.34nF, Li = 0.
Sensor Terminals:
Uo = 6.51Vdc, Io = 110mA, Po = 560mW, Co = 10µF, Lo = 2.7mH.
a = Input J-, K-, E-, T-, R-, S-, N-, B-, RO-, MV-, R1-, R2-, R3-, R4-, R5-, R6-, R7-, R8-, R9-, R10-, R11-, R12-, R13-, R14-, R15-, R16-, R17-, R18-, R19-, R20-, R21-, R22-, R23-.
b = -ISF (Intrinsically Safe) or Blank (Nonincendive).
c = Housing HPP, HPPD, HPPDN, CCP, CH6, D-BOX, LH1, LH2.

T2X/a/4-20mA/b/-c [b]. Temperature Transmitter.
Install per Control Drawing No. 100-100-38
Entity Parameters:
Ui = 30Vdc, Ii = 110mA, Pi = 825mW, Ci = 4.7nF, Li = 0.
RTD Sensor Terminals:
Uo = 6.51V, Io= 110mA, Po = 0.716W, Co = 2.32µF, Lo = 3mH.
a = Input J-, K-, E-, T-, R-, S-, N-, B-, RO-, MV-, R1-, R2-, R3-, R4-, R5-, R6-, R7-, R8-, R9-, R10-, R11-, R12-, R13-, R14-, R15-, R16-, R17-, R18-, R19-, R20-, R21-, R22-, R23-.
b = -ISF (Intrinsically Safe) or Blank (Nonincendive).
c = Housing HPP, HPPD, HPPDN, CCP, CH6, D-BOX, LH1, LH2.

SIY/a/4-20mA/b/-c [d]. Temperature Transmitter.
Install per Control Drawing No. 100-100-60
Entity Parameters:
Ui = 30Vdc, Ii = 110mA, Pi = 825mW, Ci = 10.34nF, Li = 0.
Sensor Terminals:
Uo = 6.51 V, Io = 110 mA, Po = 560mW, Co = 10µF, Lo = 2.7mH.
a = Input V (0-10V) or I (0-50mA).
b = ISF (Intrinsically Safe) or Blank (Nonincendive).
c = Housing HPP, HPPD, HPPDN, CCP, CH6, D-BOX, LH1, LH2.

13. **Specific Conditions of Use:**

1. The temperature transmitter shall be mounted within a tool-secured enclosure which meets the requirement of ANSI/UL 61010-1 and is capable of accepting applicable wiring methods per the NEC®. The enclosure shall have a minimum type of protection IP20 but shall have a suitable degree of protection against deterioration of the equipment that would adversely affect its suitability for use in Class I, Division 1, Zone 0 or Division 2 locations.
2. No connection shall be made to the communications 'COM' port in Hazardous (Classified) Locations.
3. Programming through the communication port shall only be done in the unclassified location using the Moore Industries USB cable, Part Number 804-030-26.

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14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
18th August 2020	Supplement 5: Report Reference: – PR456506 dated 18th August 2020. Description of the Change: Increase Nonincendive and Ordinary Location Voltage from 30V to 42V. Re-examination to Standards FM3600, FM3611 and FM3810.