



1 TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective systems intended for use in Potentially
Explosive Atmospheres - Directive 94/9/EC**

3 Type Examination Certificate No: **FM10ATEX0055X**
4 Equipment or protective system:
(Type Reference and Name) **MODEL TCM TEMPERATURE CONCENTRATOR MODULE**

5 Name of Applicant: **Moore Industries-International, Inc.**

6 Address of Applicant: **16650 Schoenborn Street
North Hills, CA 91343
USA**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Ltd. certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:
3041010EC dated 1st December, 2010

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:
EN60079-0:2006, and EN 60079-15:2005

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



II 3 G Ex nA [nL] IIC T4 (-40 ≤ Ta ≤ 85°C)
T5 (-40 ≤ Ta ≤ 40°C)

Nicholas Ludlam
Deputy Certification Manager, FM Approvals Ltd.

Issue date: 3rd December, 2010

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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SCHEDULE

to Type Examination Certificate No. FM10ATEX0055X

13 Description of Equipment or Protective System:

The Model TCM Temperature Concentrator Module accepts any combination of up to sixteen RTD, T/C, mV and resistance/potentiometer signal inputs. It converts the sensor inputs to the HART digital communications protocol, and transmits the data from the field to the control room.

The Model TCM has a nominal voltage of 33 Vdc and draws a nominal current of 12.5 mA. The operating ambient range is specified as -40°C to 85°C. The Model TCM consists of eight PC boards consisting of a power supply board, a terminal board, a CPU board, a communication port board and four input boards.

The Model TCM electronics are located inside of a metallic DIN rail style housing. This housing is required to be located in a final enclosure. The housing is approximately 4.96" x 4.88" x 3.94". The front of the housing contains plug in screw type terminals. The top face of the housing contains six connector input sense devices numbered 0 - 5 and the bottom face of the housing consists of ten connectors for input sense devices numbered 6 - 15. The bottom face of the housing also contains a 2 clamp terminal connector for power (+PS and -PS). The face of the housing also contains a communication port for programming at the factory. The communications port is not for use in the explosive atmosphere.

TCM/a/HART/15-30Vdc/b/DIN. Temperature Concentrator Module.

Energy Limitation Parameters: Field Sensor Terminals:

$U_o = 4 \text{ V}$, $I_o = 254.14 \text{ mA}$, $P_o = 717.38 \text{ mW}$, $C_o = 396 \text{ }\mu\text{F}$, $L_o = 9.4 \text{ }\mu\text{H}$.

a= Input: TPRG, J-, K-, E-, T-, R-, S-, N-, B-, C-, MV, R1-, R2-, R3-, R4-, R5-, R6-, R7-, R8-, R9-, R10-, R11-, R12-, R13-, R14-, RO, or POT.

b= Options: -TROP or -VTD

14 Special Conditions for Safe Use:

1. If the Model TCM Temperature Concentrator Module is installed as Category 3 equipment, it shall be installed in an enclosure which maintains an ingress protection rating of IP54 and meets the enclosure requirements of EN60079-0 and EN60079-15.
2. The Model TCM Temperature Concentrator Module shall contain external transient protection to prevent the supply voltage from exceeding 46.2V including tolerance.
3. Using the box provided on the nameplate, the user shall permanently mark the protection type chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
4. The COM port shall not be used in the hazardous area.

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

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17 **Approved Drawings**

Details of the approved drawings and documents are identified in the confidential report identified in item 8.

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