1 **TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 04ATEX4111X** Issue: **4**

4 Equipment: **Trunkguard TG200 Series Device Couplers**

5 Applicant: **Moore Industries Incorporated**

6 Address: 16650 Schoenborn Street
Sepulveda
CA 91343-6196
USA

7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service certifies that this equipment has been found to comply with the Essential Health and Safety Requirements that relate to the design of Category 3 equipment, which is intended for use in potentially explosive atmospheres. These Essential Health and Safety Requirements are given in Annex II to European Union Directive 94/9/EC of 23 March 1994.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:

EN 50021:1999 EN 50281-1-1:1998

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 of the specified equipment, and not to specific items of equipment subsequently manufactured.

12 The marking of the equipment shall include the following:

II 3 GD T100°C IP66
EEx nA[nL] IIC T5
(Ta = -40°C to +70°C)

Project Number 52L20665
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Certification Officer







**Sira Certification Service**
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com

13 **DESCRIPTION OF EQUIPMENT**

The TG200 Series Device Coupler is designed to facilitate the connection of multiple process measurement & control devices using fieldbus technology into fieldbus segments. The unit has designation TG2XX-DIN where XX may be 04, 08, 0X to indicate 4, 8 or 10 spurs respectively, and the unit is rated at 9 to 32V DC.

The TG200 unit comprises a printed circuit board populated with components and terminal blocks, this is then fitted in a plastic case with end brackets and a top cover. The unit is filled with encapsulant such that the terminal blocks and light emitting diodes (LEDs) protrude through the encapsulant. The LEDs are visible through windows in the top cover label. The end brackets may have integral mouldings for mounting on DIN rail or flat brackets for surface mounting. The unit is provided with shrouds (covers) and fillers for the Trunk In and Trunk Out terminal blocks such that accidental contact with non-energy limited live parts is prevented, achieving a minimum of IP30 protection. The spur terminal blocks provide connections to the energy limited circuits, which may be removed in the hazardous area while the unit is energised.

Each TG200 unit has a segment input (Trunk In), and provides multiple device connection points (Spurs) together with onward segment transmission (Trunk Out). The TG200 unit is to be installed inside an external enclosure that is suitably certified for Zone 2 use, which may be selected by the installer, subject to a Special Condition for Safe Use.

Installation of the covers and fillers on the Trunk In and Trunk Out terminals permits the external enclosure to be opened in the hazardous area whilst the TG200 unit is energised.

**Electrical Parameters**

| Trunk | Spurs |
|---|---|
| Trunk in = Trunk out | Uo = Ui (This refers to the input voltage into the Trunk) |
| Ui ≤ 32 V | Io = 50 mA |
| Ii ≤ 1.5 A | Ci = 0 |
| | Li = 0 |

External circuits should be limited to the following:

| Group | Maximum External Capacitance, Co | Maximum External Inductance, Lo |
|---|---|---|
| IIC | 180 nF | 30 mH |
| IIB | 1230 nF | 120 mH |
| IIA | 4600 nF | 240 mH |

Wiring access to the Trunk In and Trunk Out connections in the hazardous area is only permitted when the TG200 unit is de-energised.





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**Variation 1** - This variation introduced the following changes:

i. To permit the TG200 Printed Circuit Board to contain up to 32 spur short-circuit protection units (SSCPUs) and one autoterminator circuit. The numbers of SSCPUs that may be fitted on to a printed circuit are normally specified in multiples of two, starting with four circuits. These are designated as TG204, TG206, TG208 up to TG232. The drawings indicate a TG208 as an example.
ii. To permit changes to the circuit of the TG200 including component type, component name designation and component values.
iii. To permit the PCB to be re-laid out.
iv. To permit changes to drawing format to allow the use of Moore Industries drawing paper.
v. To permit changes to the certification label format to include Moore-Hawke LLC, Moore Industries-International Inc, CA 91343, USA.

**Variation 2** - This variation introduced the following changes:

i. To permit the introduction of three alternative circuits.
ii. To permit a re-design of the current-limiting circuit.
iii. To permit the addition of RF protection components.
iv. To permit the addition of an optional terminator board module.
v. To permit the optional use of a metal inner enclosure material instead of plastic.

**Variation 3** - This variation introduced the following changes:

i. IECEx certification details WERE added to the labels.
ii. Drawing number FTG200-002 has been replaced by drawing number TG200-008 and is withdrawn.
iii. The addition of connector information to clarify the use of screwed plug/header terminals.
iv. Two, new Conditions of Certification were introduced.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

| Issue | Date | Report No. | Comment |
|---|---|---|---|
| 0 | 6 May 2004 | R52A10724A | The release of the prime certificate. |
| 1 | 14 February 2006 | R52A13932A | The introduction of Variation 1. (Following changes to the prime certificate, t his Variation was re-issued 22 November 2006) |
| 2 | 22 November 2006 | R52A10724A | Prime certificate re-issued 22 November 2006 to correct a typographical error. |
| 3 | 16 June 2008 | R59A17276A | This Issue covers the following changes:<br>• All previously issued certification was rationalised into a single certificate, Issue 3, Issues 0 to 2 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.<br>• The introduction of Variation 2, the change of the Applicant's name, first recognised 19 August 2005, was re-confirmed. |
| 4 | 4 November 2009 | R52L20665A | The introduction of Variation 3. |





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## 15 SPECIAL CONDITIONS FOR SAFE USE

15.1 When the Trunkguard TG200 Series Device Couplers have not been provided with an enclosure by the manufacturer, then they shall be fitted in a terminal enclosure by the user/installer, in accordance with the following conditions:

- The enclosure shall be compliant with the requirements for Directive 94/9/EC, Category 3 GD, alternatively, an enclosure that has been certified by a notified body as EEx e II and is suitable for Category II 2GD applications may also be used.
- The enclosure shall be IP66 minimum.
- A minimum clearance of 1 mm between live parts and earthed metal shall be maintained.
- If other electrical circuits are fitted into the enclosure, then they shall be suitably approved for the hazardous area of installation and all live parts shall be protected to a minimum of IP30 when the enclosure is opened.
- The label supplied with the Trunkguard TG200 Series Device Couplers shall be affixed to the exterior of the enclosure.

15.2 If external maintenance devices are connected to the test points, they shall be certified EEx n, EEx i or otherwise approved for use in the hazardous area; in addition, the output parameters of these devices shall not exceed those of the spur circuit, i.e. Uo = 32 V and Io = 50 mA. The covers for the test points shall only be removed for the minimum time necessary for the maintenance operations and shall be replaced after use.

## 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed reports listed in Section 14.2.

## 17 CONDITIONS OF CERTIFICATION

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of Type Examination Certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 The following routine test is to be performed on each product manufactured:

An electric strength test of 500 V ac, shall be applied between circuit and the casing covered in metal foil for at least 1 minute as required by EN 50021:1999 clause 9. No breakdown shall occur.

17.4 If the manufacturer supplies the Trunkguard TG200 Series Device Couplers already fitted in a terminal enlosure, then this enclosure shall be suitably certified and the key attributes listed in the table below shall be maintained by their original certificate.

| Product | Certificate no. | Key attributes |
|---|---|---|
| Terminal enclosure | As appropriate | Either: Certified EEx e II, Category 2 GD or EEx nA II, Category 3 GD<br>Or: Compliant with the requirements for Directive 94/9/EC for Category 3 GD<br>And: IP66 |

17.5 The manufacturer shall substitute, on the approved label affixed to the apparatus, the new name and address for the old name and address.

17.6 The manufacturer shall take all reasonable steps to ensure that the user/installer complies with the Special Conditions for Safe Use.

17.7 The manufacturer shall supply the user/installer with a suitable label.





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# Certificate Annexe

**Certificate Number:** Sira 04ATEX4111X

**Equipment:** Trunkguard TG200 Series Device Couplers

**Applicant:** Moore Industries Incorporated

sira CERTIFICATION

**Issue 0**

| Drawing No. | Rev. | Sheet | Date | Description |
|---|---|---|---|---|
| FTG200-001 | 1 | 1 of 1 | 20 Apr 04 | Certification label |
| FTG200-002 | 1 | 1 of 1 | 20 Apr 04 | Enclosure Certification label |
| FTG200-003 | 1 | 1 of 1 | 30 Mar 04 | TG200-DIN Series General Assembly |
| FTG200-004 | 1 | 1 of 1 | 07 Jul 04 | TG200 Series Schematic Diagram |
| FTG200-005 | 1 | 1 of 1 | 07 Jul 04 | TG200 Series Electronic BOM |
| FTG200-006 | 1 | 1 to 4 | 01 May 04 | TG208 Printed Circuit Board |

**Issue 1**

| Drawing No. | Rev. | Sheet | Date (Sira stamp) | Description |
|---|---|---|---|---|
| FTG200-001 | B | 1 of 1 | 21 Dec 05 | TG200 Certification Label - Sira |
| FTG200-002 | B | 1 of 1 | 21 Dec 05 | TG200 Certification Label - Sira |
| FTG200-003 | A | 1 of 1 | 01 Nov 05 | TG200 General Assembly |
| FTG200-004 | A | 1 of 1 | 01 Nov 05 | TG200 Circuit Diagram |
| FTG200-005 | A | 1 of 1 | 01 Nov 05 | TG200 BOM |
| FTG200-006 | A | 1 of 1 | 01 Nov 05 | TG200 PCB General Arrangement |

**Issue 2**

| Drawing No. | Rev. | Sheet | Date | Description |
|---|---|---|---|---|
| FTG200-001 | 1 | 1 of 1 | 20 Apr 04 | Certification label |
| FTG200-002 | 1 | 1 of 1 | 20 Apr 04 | Enclosure Certification label |
| FTG200-003 | 1 | 1 of 1 | 30 Mar 04 | TG200-DIN Series General Assembly |
| FTG200-004 | 1 | 1 of 1 | 07 Jul 04 | TG200 Series Schematic Diagram |
| FTG200-005 | 1 | 1 of 1 | 07 Jul 04 | TG200 Series Electronic BOM |
| FTG200-006 | 1 | 1 to 4 | 01 May 04 | TG208 Printed Circuit Board |

**Issue 3**

| Drawing No. | Rev. | Sheet | Date | Description |
|---|---|---|---|---|
| FTG200-001 | B | 1 of 1 | 21 Dec 05 | TG200 Certification Label - Sira |
| FTG200-002 | B | 1 of 1 | 21 Dec 05 | TG200 Certification Label - Sira |
| FTG200-004 | B3 | 1 to 3 | Feb 08 | TG200 schematic |
| FTG200-005 | B3 | 1 to 3 | Feb 08 | TG200 BoM |
| TG200-DIN1 | A | 1 of 1 | Aug 07 | General assembly |
| TRK-TERM | C | 1 of 1 | Jun 08 | Terminator board schematic and assembly |

FTG200-003 is withdrawn and replaced by TG200-DIN1. FTG200-006 is discontinued as it contains no safety-critical information.

**Issue 4**

| Drawing No. | Rev. | Sheet | Date (Sira stamp) | Title |
|---|---|---|---|---|
| TG200-001 | C | 1 of 1 | 06 Oct 09 | TG200 Certification Label ATEX/IECEx |
| TG200-008 | D | 1 of 1 | 06 Oct 09 | TG200 Enclosure Label Serial/Model/Cert/ATEX/cFMus/IECEx |
| TG200-DIN1 | C | 1 of 1 | 06 Oct 09 | General assembly |

FTG200-002 has been replaced by drawing number TG200-008 and has therefore been withdrawn.







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