



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 02ATEX2013X** Issue: **8**

4 Equipment: **T\*EI780x and Z21450-Series I/P Transducers**

5 Applicant: **Fairchild Industrial Products Company**

6 Address: **3920 West Point Boulevard  
Winston-Salem  
North Carolina  
27103  
USA**

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, 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 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 to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012

EN 60079-11:2012

EN 60079-26:2007

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

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 EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

**TAEI7800, TDEI7800 & Z21450**



II 1GD  
Ex ia IIB T4 Ga  
Ex ia IIIC T90 °C Da  
Ta = -40°C to +80°C

**TTEI7800 & TREI7800**



II 1G  
Ex ia IIB T4 Ga  
Ta = -40°C to +80°C

Project Number 26598

C Ellaby  
Deputy Certification Manager

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**SCHEDULE**

**EC TYPE-EXAMINATION CERTIFICATE**

Sira 02ATEX2013X  
Issue 8

**13 DESCRIPTION OF EQUIPMENT**

The T\*EI780x and Z21450-Series I/P Transducers are process control devices that convert a direct current or voltage input to a pressure output. The transducers consist of two sections, the Primary Converting Section and the Relay Section. The Primary Converting Section consists of the feedback/control electronics, electronic feedback sensor and nozzle. The Relay Section consists of the piezo-electric flapper, upper diaphragm and lower control diaphragm. The Relay Section is connected to a common supply that regulates the output pressure. The electronics circuits are mounted on two printed circuit boards which are interconnected via connection pins. The T\*EI7800 and Z21450 series differ in the ranges and units of process pressure outputs and in physical construction.

The equipment has the following safety description:

$$\begin{array}{ll}
 U_i = 28 \text{ V} & C_i = 12 \text{ nF} \\
 I_i = 100 \text{ mA} & L_i = 0 \\
 P_i = 0.7 \text{ W} &
 \end{array}$$

Table of models		
Model number	Electrical connection type	Intended locations
TAEI7800	cable entry via conduit	Indoor or outdoor, flammable gases & dusts
TDEI7800 & Z21450	cable entry via a DIN-connector	Indoor or outdoor, flammable gases & dusts
TTEI7800	terminal block mounted externally	Indoor, flammable gases only
TREI7800	terminal block mounted externally, 180°C orientation compared to the TTEI7800	Indoor, flammable gases only

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

- i. The piezo actuator was coated in a polymer jacket to provide water-resistant qualities; this version is to be designated as a Type TEXI7850-Series I/P Transducer.
- ii. Minor changes to the layout of the power supply PCB TX7800 and the signal conditioning PCB TX7800 were recognised.
- iii. The resistor R5 was allowed to be chosen to suit application.
- iv. The introduction of minor alterations of schedule drawings.
- v. The maximum process pressure was increased to 800 kPa, 8.0 bar, 120 psi for the TEXI7800/TEXI7850 and 1000 kPa, 10 bar, 150 psi for the T\*EI7800 according to the model.

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

- i. The recognition of minor drawing modifications; these changes do not affect the aspects of the product that are relevant to explosion safety.

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

- i. The T\*EI7800 and TEXI7800 – Series I/P Transducer were mechanically modified to give an extended range of output pressures, thus creating models T\*EI7801 and TEXI7801.
- ii. The ambient temperature range was extended to -40°C to +72°C for all models.

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## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX2013X  
Issue 8

**Variation 4** - This variation introduced the following changes:

- i. To recognise the introduction of the Z21450-Series I/P Transducers which are identical to the TDEI7800 and have a 2 part DIN connector.

**Variation 5** - This variation introduced the following changes:

- i. Changes to the artwork of the signal conditioning board (TEXI78\*\* only) and power supply boards (TEXI78\*\* and T\*EI780\*), including a rationalisation of the artwork drawings.
- ii. The introduction of a marking drawing (21110) for the TEXI78\*\*.
- iii. A minor change to drawing EB-19928 (piezo) which adds a note, this change is administrative only and do not affect the aspects of the product that are relevant to explosion safety.

**Variation 6** - This variation introduced the following changes:

- i. Following appropriate assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents previously listed in section 9, EN 50014:1997 (amendments A1 to A2), EN 50020:2002 and EN 50284:1999, were replaced by those currently listed, the markings in section 12 were updated accordingly and the special conditions for safe use were amended to recognise the new standards.
- ii. The Description was modified to clarify the models that are currently manufactured and recognise that the TEXI78XX is covered by its own certificate.
- iii. The safety parameters were changed:

From		To	
Ui = 28 V	Ci = 0	Ui = 28 V	Ci = 12 nF
li = 100 mA	Li = 0	li = 100 mA	Li = 0
Pi = 0.7 W		Pi = 0.7 W	
- iv. The upper ambient temperature was raised to 80°C.
- v. The power supply board was modified.
- vi. Minor drawing were recognised, these do not affect the explosion safety aspects of the product.
- vii. The previously certified drawings were reviewed and a number were removed.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report No.	Comment
0	11 July 2002	R52A8643A	The release of prime certificate.
1	25 September 2002	R52A8643B	Report number R52A8643B replaced report number R52A8643A.
2	16 July 2004	R52V12092A	The change described in report no. R52V12092A were recognised.
3	16 January 2006	R51A14186A	The introduction of Variation 1.
4	9 August 2007	R52A16764A	The introduction of Variation 2.

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## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX2013X  
Issue 8

Issue	Date	Report No.	Comment
5	7 November 2008	R52A19061A	This Issue covers the following changes: <ul style="list-style-type: none"><li>All previously issued certification was rationalised into a single certificate, Issue 5, Issues 0 to 4 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.</li><li>The introduction of Variation 3.</li></ul>
6	24 March 2010	R21969A/00	The introduction of Variation 4.
7	17 September 2010	R22565A/00	The introduction of Variation 5.
8	31 March 2014	R26598A/00	The introduction of Variation 6

#### 15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

- 15.1 Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of devices TDE1780, TAE1780 and Z21450 series may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a zone 0 location. In addition, the equipment shall only be cleaned with a damp cloth. This is particularly important if the equipment is installed in a zone 0 location.
- 15.2 The enclosure of the devices TDE1780 and Z21450 series contains non-metallic materials that shall be protected from UV light (for example, daylight or light from luminaries) when installed.
- 15.3 The enclosure of devices TDE1780, TAE1780 and Z21450 series are manufactured from aluminium alloy. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered during installation, particularly if the equipment is installed in a zone 0 location.
- 15.4 The enclosure of devices TDE1780, TAE1780 and Z21450 series are capable of withstanding only low level (4J) of mechanical impact and hence additional protection shall be provided to ensure equipment cannot be subjected to higher level mechanical impact.
- 15.5 The DIN socket connected to TDE1780 and Z21450 series shall comply with IP65 requirements.
- 15.6 The conduits connected to the enclosure of TAE1780 shall maintain the IP65 requirements of the enclosure.
- 15.7 TTE1780X and TRE17800 have exposed external connection. These devices shall be installed in an enclosure that maintains an ingress protection rating of at least IP20 and meets the enclosure requirements of IEC 60079-0 for Group II equipments.

#### 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the 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 EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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# Certificate Annexe

Certificate Number: Sira 02ATEX2013X

Equipment: T\*EI7801 and Z21450-Series I/P  
Transducers

Applicant: Fairchild Industrial Products Company

## Issues 0 and 1

Drawing No.	Sheet	Rev.	Date	Description
330-IPI-010	1 of 1	L	28 Aug 98	Transformer
EB-19770	1 of 1	B	09 Jul 02	Nameplate
044-IPI-091	2 of 2	-	20 Apr 98	T*EI7800 – artwork, power supply (top) board
044-IPI-093	2 of 2	A	13 Oct 98	T*EI7800 – artwork, signal conditioning (bottom) board
907-IPI-052	1 of 1	B	02 Nov 98	T*EI7800 – schematic, signal conditioning (bottom) board
907-IPI-053	1 of 1	-	04 Aug 98	T*EI7800 – schematic, power supply (top) board
EB-19732	1 of 1	-	19 Jan 01	T*EI7800 – TD filter plate assembly
EB-19734	1 of 1	-	19 Jan 01	T*EI7800 – TT filter plate assembly
EB-19778	1 of 2	A	28 May 02	T*EI7800 – critical parts list
EB-19790	1 of 1	A	28 May 02	T*EI7800 – general assembly
044-IPI-096	2 of 2	-	03 Apr 98	TEXI7800 – artwork, power board
044-IPI-098	2 of 2	A	13 Jul 95	TEXI7800 – artwork, signal conditioning board
907-IPI-056	1 of 1	B	15 Nov 99	TEXI7800 – schematic, signal conditioning board
907-IPI-057	1 of 1	-	04 Aug 98	TEXI7800 – schematic, power board
EB-19778	2 of 2	A	28 May 02	TEXI7800 – critical parts list
EB-19791	1 of 1	B	31 May 02	TEXI7800 – general assembly

## Issue 2

Drawing No.	Sheet	Rev.	Date	Description
EB-19770	1 of 1	D	24 May 04	Nameplate

## Issue 3

Drawing No.	Sheet	Rev.	Date (Sira stamp)	Description
EB-19770	1 of 2	E	21 Nov 05	Nameplate – TEXI7800
EB-19770	2 of 2	E	21 Nov 05	Nameplate – TEXI7850
907-IPI-057	1 of 1	A	21 Nov 05	Power Supply Schematic – TXI7800
EB-19732	1 of 1	D	21 Nov 05	TD Filter PC assembly
EB-19734	1 of 1	C	21 Nov 05	TT Filter PC assembly
EA-19942	1 of 1	-	21 Nov 05	Connector
EB-19928	1 of 1	A	21 Nov 05	Piezo Ceramic Actuator Assembly
044-IPI-091	1 of 2	A	21 Nov 05	Power Supply PCB T7800
044-IPI-096	1 of 1	B	21 Nov 05	Power Supply PCB TX7800
044-IPI-098	1 of 1	C	21 Nov 05	Signal Conditioning PCB TX7800
Txi7800_b.pcb (L1)	1 of 1	B	21 Nov 05	PCB Layout (21:44:14)
Txi7800_b.pcb (L2)	1 of 1	B	21 Nov 05	PCB Layout (21:44:25)
TXI_PS1_a.pcb (L1)	1 of 1	A	21 Nov 05	PCB Layout (21:17:25)
TXI_PS1_a.pcb (L2)	1 of 1	A	21 Nov 05	PCB Layout (21:17:45)

## Issue 4

Drawing No.	Sheet	Rev	Date	Description
330-IPI-010	1 of 1	M	14 Jun 06	Transformer
EB-19928	1 of 1	B	23 Dec 05	Piezo Ceramic Actuator Assembly
44-IPI-091	1 of 1	B	14 Jun 06	T*EI7800 – artwork, power supply (top) board
044-IPI-093	1 of 1	B	14 Jun 06	T*EI7800 – artwork, signal conditioning (bottom) board

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# Certificate Annexe

Certificate Number: Sira 02ATEX2013X

Equipment: T\*EI7801 and Z21450-Series I/P  
Transducers

Applicant: Fairchild Industrial Products Company

Drawing No.	Sheet	Rev	Date	Description
EB-19732	1 of 1	E	13 Jun 06	T*EI7800 – TD filter plate assembly
EB-19734	1 of 1	E	13 Jun 06	T*EI7800 – TT filter plate assembly
044-IPI-096	1 of 1	C	13 Jun 06	TEXI7800 – artwork, power board
044-IPI-098	2 of 2	D	13 Jun 06	TEXI7800 – artwork, signal conditioning board

## Issue 5

Drawing No.	Sheets	Rev.	Date	Description
EB-19790	1 of 1	B	27 Nov 07	T*EI7800 General Assembly
ED-19791	1 of 1	C	27 Nov 07	TEXI7800 General Assembly
EB-19770	1 of 1	F	27 Nov 07	Nameplate

## Issue 6

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Description
21457	1 of 1	-	24 Mar 10	ATEX Nameplate

## Issue 7

Drawing No.	Sheet	Rev.	Date (Sira stamp)	Description
EB-19778	1 of 2	B	11 Aug 10	Critical component list, T*EI780* and TEXI78**
EB-19928	1 of 1	C	11 Aug 10	Piezo Ceramic Actuator Assembly
EB-19770	1 of 1	G	11 Aug 10	T*EI780* - nameplate
907-IPI-053	1 of 1	A	11 Aug 10	T*EI780* – schematic, power supply (top) board
908-IPI-036	1 to 3	B	11 Aug 10	T*EI780* – artwork, power supply (top) board
908-IPI-037	1 to 3	C	11 Aug 10	T*EI780* – artwork, signal conditioning (bottom) board
21110	1 of 1	B	11 Aug 10	TEXI78** - nameplate
907-IPI-056	1 of 1	C	11 Aug 10	TEXI78** – schematic, signal conditioning board
907-IPI-057	1 of 1	B	11 Aug 10	TEXI78** – schematic, power board
908-IPI-038	1 to 4	E	11 Aug 10	TEXI78** – artwork, signal conditioning board
908-IPI-039	1 to 5	B	11 Aug 10	TEXI78** – artwork, power board

The following drawings were removed.

Drawing No.	Sheet	Rev.	Date	Description
044-IPI-091	2 of 2	-	20 Apr 98	T*EI7800 – artwork, power supply (top) board
044-IPI-093	2 of 2	A	13 Oct 98	T*EI7800 – artwork, signal conditioning (bottom) board
044-IPI-091	1 of 2	A	21 Nov 05	Power Supply PCB T7800
044-IPI-096	1 of 1	B	21 Nov 05	Power Supply PCB TX7800
044-IPI-098	1 of 1	C	21 Nov 05	Signal Conditioning PCB TX7800
Txi7800_b.pcb (L1)	1 of 1	B	21 Nov 05	PCB Layout (21:44:14)
Txi7800_b.pcb (L2)	1 of 1	B	21 Nov 05	PCB Layout (21:44:25)
TXI_PS1_a.pcb (L1)	1 of 1	A	21 Nov 05	PCB Layout (21:17:25)
TXI_PS1_a.pcb (L2)	1 of 1	A	21 Nov 05	PCB Layout (21:17:45)
44-IPI-091	1 of 1	B	14 Jun 06	T*EI7800 – artwork, power supply (top) board
044-IPI-093	1 of 1	B	14 Jun 06	T*EI7800 – artwork, signal conditioning (bottom) board
044-IPI-096	1 of 1	C	13 Jun 06	TEXI7800 – artwork, power board
044-IPI-098	2 of 2	D	13 Jun 06	TEXI7800 – artwork, signal conditioning board

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# Certificate Annexe

Certificate Number: Sira 02ATEX2013X

Equipment: T\*EI7801 and Z21450-Series I/P  
Transducers

Applicant: Fairchild Industrial Products Company

## Issue 8

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Description
330-IPI-010	1 of 1	N	28 Mar 13	Transformer - Lo Power
907-IPI-052	1 of 1	C	28 Mar 13	Schematic, Signal Conditioner – Circuit Diagram
907-IPI-053	1 of 1	E	28 Mar 13	Schematic, Power Supply – Circuit Diagram
908-IPI-036	1 to 5	F	28 Mar 13	PCB layer details for 044-IPI-091
EB-19731	1 of 1	B	28 Mar 13	TD Filter Plate PCB/Drilling
EB-19732	1 of 1	E	28 Mar 13	TD Filter Plate PCB Assembly
EB-19733	1 of 1	C	28 Mar 13	TT Filter plate PCB/Drilling
EB-19734	1 of 1	E	28 Mar 13	TT FILTER PLATE PCB Assembly
EB-19770	1 of 1	N	28 Mar 13	T*EI780x ATEX Label Drawing
EB-19790	1 to 2	F	28 Mar 13	T*EI780x Series General Assembly Drawing
EB-21113	1 of 1	C	28 Mar 13	T*EI780x BLOCK DIAGRAM
EB-21457	1 of 1	E	28 Mar 13	Z21450 ATEX Label Drawing
21168	1 of 1	C	28 Mar 13	Critical Parts List

EA-19942

The following drawings were removed.

Drawing	Sheet	Rev.	Date	Description
EB-19778	1 of 2	A	28 May 02	T*EI7800 – critical parts list
907-IPI-056	1 of 1	B	15 Nov 99	TEXI7800 – schematic, signal conditioning board
907-IPI-057	1 of 1	-	04 Aug 98	TEXI7800 – schematic, power board
EB-19778	2 of 2	A	28 May 02	TEXI7800 – critical parts list
EB-19791	1 of 1	B	31 May 02	TEXI7800 – general assembly
907-IPI-057	1 of 1	A	21 Nov 05	Power Supply Schematic – TXI7800
EA-19942	1 of 1	-	21 Nov 05	Connector

Drawing	Sheet	Rev.	Date (Sira stamp)	Description
EB-19778	1 of 2	B	11 Aug 10	Critical component list, T*EI780* and TEXI78**
EB-19928	1 of 1	C	11 Aug 10	Piezo Ceramic Actuator Assembly
908-IPI-037	1 to 3	C	11 Aug 10	T*EI780* – artwork, signal conditioning (bottom) board
21110	1 of 1	B	11 Aug 10	TEXI78** - nameplate
907-IPI-056	1 of 1	C	11 Aug 10	TEXI78** – schematic, signal conditioning board
907-IPI-057	1 of 1	B	11 Aug 10	TEXI78** – schematic, power board
908-IPI-038	1 to 4	E	11 Aug 10	TEXI78** – artwork, signal conditioning board
908-IPI-039	1 to 5	B	11 Aug 10	TEXI78** – artwork, power board

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