



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: Sira 01ATEX1230

4 Equipment: TX6642 Intrinsically Safe Power Supply

5 Applicant: Trolex Ltd.

6 Address: Newby Rd
Hazel Grove
Stockport
Cheshire SK7 5DY

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 confidential report number R52A7663B.

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 50014:1997 plus Amendments 1 and 2
- EN 50020:1994
- EN 50018:2000

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:



I M2 (M1)
EEx d [ia] I

Project Number 52V11600
Date 11 January 2002
Re-issued 24 February 2004
C. Index 16

C Ellaby
Certification Officer

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England
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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1230

Re-issued 24 February 2004 to allow report number R52A7663A to be replaced by report number R52A7663B.

13 DESCRIPTION OF EQUIPMENT

The TX6642 Intrinsically Safe Power Supply is a TX6641 Intrinsically Safe Power Supply Chassis, certificate number Sira 01ATEX2229X, located in flameproof enclosure.

The TX6641 Power Supply Chassis is primarily designed to provide an intrinsically safe supply to intrinsically safe equipment. It comprises a printed circuit board (PCB) that accommodates an intrinsically safe transformer, voltage clamping components and current/power limiting circuitry.

The following options of TX6641 Power Supply Chassis are available:

- Current output options - 0.5A, 1.0A, 1.4A and 1.8A
- Voltage output options - 7.5V and 12V
- Input supply options - 230 Vrms, 110 Vrms or 24 Vrms

The connection to external hazardous area equipment is made via connector J7 and the electrical output parameters are as follows:

7.7 V PSU	Short circuit current, I_o	Max output Power, P_o	Lo/Ro Ratio	Capacitance, C_o (7.7 V output)
0.5A	0.997 A	5.13 W	80.68 μH/Ω	913.7 μF
1.0A	1.8 A	9.27 W	44.63 μH/Ω	587.2 μF
1.4A	3.14 A	17.56 W	21.21 μH/Ω	317 μF
1.8A	3.14 A	17.56 W	21.21 μH/Ω	317 μF

12.35V PSU	Short circuit current, I_o	Max output Power, P_o	Lo/Ro Ratio	Capacitance, C_o (12.35V output)
0.5A	0.997 A	5.8 W	80.68 μH/Ω	32 μF
1.0A	1.8 A	10.45 W	44.63 μH/Ω	32 μF
1.4A	3.14 A	22 W	21.21 μH/Ω	19.46 μF
1.8A	3.14 A	22 W	21.21 μH/Ω	19.46 μF

The TX6641 may optionally be fitted with up to two relay boards providing up to 4 relay interfaces that have the following electrical parameters:

- I.S. terminals 3, 5, 7, 9 wrt 0V Relay contact terminals a, b and c of Relays 1-4
- U_i = 12.35 V (for the 12 V relays) U_m = 375V peak
- U_i = 7.7 V (for the 9 V relays) I_m = 5A

The enclosure comprises two fabricated steel chambers, a main chamber and an I.S connection chamber, each with bolt-on covers. Power cabling is via up to five threaded apertures for the fitting of suitably certified and dimensioned cable glands. Cabling between the two chambers is by means of an threaded aperture for the fitting of a suitably certified and dimensioned multi-core bushing.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 01ATEX1230

14 DESCRIPTIVE DOCUMENTS

14.1	Drawing	Sheet	Rev	Date	Title
	P5531.01	1 to 2	A	26 Nov 01	Power supply, certified circuit diagram and parts list
	P5531.02.01	1 of 1	A	10 Oct 01	TX6641 Power Supply Chassis, General Arrangement
	P5531.02.02	1 of 1	A	10 Oct 01	General Arrangement (TX6642 Power Supply Chassis in Ex d Enclosure)
	P5531.03.01	1 of 1	A	21 Sep 01	PCB bottom layer
	P5531.03.02	1 of 1	A	21 Sep 01	PCB bottom overlay
	P5531.03.03	1 of 1	A	21 Sep 01	PCB inner layer 1
	P5531.03.04	1 of 1	A	21 Sep 01	PCB inner layer 2
	P5531.03.05	1 of 1	A	21 Sep 01	PCB Top layer
	P5531.03.06	1 of 1	A	21 Sep 01	PCB Top overlay
	P5531.04	1 of 1	B	26 Nov 01	Transformer (certification details)
	P5531.04.01	1 of 1	B	26 Nov 01	Transformer, 24Vac, (certification details)
	P5531.06	1 of 1	A	10 Oct 01	Relay PCB connections
	P5531.08	1 of 1	A	10 Oct 01	TX6642 Certification label details
	P5111.23	1 of 1	B	17 Mar 86	Cover
	P5111.24	1 of 1	-	17 Sep 85	Terminal enclosure lid
	P5111.43	1 of 1	D	20 Jan 97	Housing
	P5111.89	1 of 1	A	11 Dec 96	PCB artwork, relay board

14.2 Report No. R52A7663B

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

None

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 Report No. R52A7663B.

17 CONDITIONS OF CERTIFICATION

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

17.3 Each enclosure shall be subjected to a routine pressure of 10.0 bar for at least 10 s as required by clause 16.1 of EN 50018:1994. There shall be no damage or permanent deformation as a result of the test.

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX1230

Dated 11 January 2002
Re-issued 24 February 2004

VARIATION NUMBER 1 (ONE)

Dated 28 March 2002
Re-issued 24 February 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The value of the mains fuses to be increased in value from 2 amps to 3.15 amps.
- 2 The upper ambient temperature to be increased to +55°C.
- 3 The change in value of some non-safety related components.
- 4 The electrical parameters to be modified as follows:

Option 1 (original parameters, unchanged)

I.S. circuit terminals 3, 5, 7, 9 wrt 0 V

Non I.S. circuits to relay contact terminals
a, b and c of Relays 1 – 4

U_i = 12.35 V (for the 12 V relays)
U_i = 7.7 V (for the 9 V relays)

U_m = 375 V_{peak}
I_m = 5 A

Option 2 (new parameters)

Non-I.S. circuit terminals 3, 5, 7, 9 wrt 0 V

I.S. circuits to relay contact terminals
a, b and c of Relays 1 – 4

U_m = 12.35 V (for the 12 V relays)
U_m = 7.7 V (for the 9 V relays)

U_i = 30 V
I_i = 5 A

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
P5531.01	1 and 2	B	05 Mar 02	Power supply, certified circuit diagram and parts list
P5531.04	1 of 1	C	16 Jan 02	Transformer (certification details)
P5531.04.01	1 of 1	C	16 Jan 02	Transformer, 24Vac, (certification details)
P5531-02-01	1 of 1	B	18 Mar 02	General arrangement (TX6641 Power Supply Chassis)
P5531.08	1 of 1	B	05 Mar 02	TX6642 Certification label details

ADDITIONAL CONDITIONS OF CERTIFICATION

None

Re-issued 24 February 2004 to recognise the re-issue of the prime certificate, to clarify the variations and to allow report number R52M8692B to replace report number R52M8692A.

File No. 52V11600

C Ellaby
Certification Officer

Report No. R52M8692B

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER	Sira 01ATEX1230	Dated	11 January 2002
		Re-issued	24 February 2004
VARIATION NUMBER	2 (TWO)	Dated	16 April 2002
		Re-issued	24 February 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The component parts list to be changed to recognise that the value specified for some of the safety resistors is now defined by their minimum resistance.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
P5531.01	1 and 2	C	05 Apr 02	Power Supply, Certified Circuit Diagram And Parts List

ADDITIONAL CONDITIONS OF CERTIFICATION

None

Re-issued 24 February 2004 to recognise the re-issue of the prime certificate.

File No. 52V11600

Report No. R52M8976A

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX1230

Dated 11 January 2002
Re-issued 24 February 2004

VARIATION NUMBER 3 (THREE)

Dated 24 May 2002
Re-issued 24 February 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The modification of the output crowbar circuit.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev	Date	Description
P5531.01	1 and 2	D	22 May 02	Power Supply, Certified Circuit Diagram And Parts List

ADDITIONAL CONDITIONS OF CERTIFICATION

None

Re-issued 24 February 2004 to recognise the re-issue of the prime certificate.

File No. 52V11600

Report No. R52A9098A

C Ellaby 
Certification Officer

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX1230 Dated 11 January 2002
Re-issued 24 February 2004

VARIATION NUMBER 4 (FOUR) Dated 3 November 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The crowbar circuits to be modified to increase the operational voltage and speed, the value of the output resistor R26 has been also changed; the electrical parameters for the power supplies are modified as follows:

7.5 V PSU (8.5V o/p crowbar)	Short circuit current, I_o in A	Max output Power, P_o in W	L_o/R_o Ratio in $\mu\text{H}/\Omega$	Capacitance, C_o in μF
0.5 A	0.873	5.28	72.69	646
1.0 A	1.76	10.63	36.17	560
1.4 A	1.76	10.63	36.17	560
1.8 A	1.76	10.63	36.17	560

12.0 V PSU (13.0 V o/p crowbar)	Short circuit current, I_o in A	Max output Power, P_o in W	L_o/R_o Ratio in $\mu\text{H}/\Omega$	Capacitance, C_o in μF
0.5 A	0.873	6.33	72.6	32.0
1.0 A	1.76	12.73	36.17	30.29
1.4 A	2.38	17.23	26.72	19.46
1.8 A	2.38	17.23	26.72	19.46

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev.	Date	Description
P5531.01	1 of 2	F	26 Jul 04	Power supply circuit diagram
P5531.01	2 of 2	F	26 Jul 04	Power supply circuit parts list

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 52A11948
Report No. R52A11948A


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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX1230 Dated 11 January 2002
Re-issued 24 February 2004

VARIATION NUMBER 5 (FIVE) Dated 3 November 2004

VARIATION TO EQUIPMENT

To permit:

- 1 The introduction of salvage modifications to the re-settable regulator.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev.	Date	Description
P5531.122	1 of 1	A	06 Feb 04	Input regulator and reset salvage schematic excluding 1.8A version
P5531-111	1 of 1	C	07 Oct 03	Input regulator and reset PCB Salvage drawing excluding 1.8A version
P5531.121	1 of 1	A	15 Jan 04	Input regulator and reset salvage schematic for 1.8 A types
P5531-111-02	1 and 2	B	06 Jan 04	Input regulator and reset PCB Salvage drawing for 1.8 A types

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 52A11035

Report No. R52A11035A

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EC TYPE-EXAMINATION CERTIFICATE VARIATION

CERTIFICATE NUMBER Sira 01ATEX1230

Dated 11 January 2002
Re-issued 24 February 2004

VARIATION NUMBER 6 (SIX)

Dated 4 April 2005

VARIATION TO EQUIPMENT

To permit:

- 1 The re-settable regulator to be modified.

DESCRIPTIVE DOCUMENTS

Number	Sheet	Rev.	Date	Description
P5531-106	1 of 1	B	15 Jan 04	Regulator reset PCB
P5531-107	1 and 2	C	20 Nov 03	Input regulator and reset PCB circuit diagram and parts list

ADDITIONAL CONDITIONS OF CERTIFICATION

None

File No. 52A13139

Report No. R52A13139A

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Certification Officer


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UK COAL MINING LIMITED
EQUIPMENT, SYSTEMS, MATERIALS & SUBSTANCES
ACCEPTANCE CERTIFICATE

Date of Application: 2 October 2002		
(1) Name of Supplier/Contact: D S Kerfoot	Name of Company/Supplier: Trox Ltd	Description of Product: TX6641 & TX6642 I.S. Power Supplies
(2) Acceptance to be carried out by: _____	(3) Company Address: Newby Road Hazel Grove Stockport Cheshire SAK7 5DY	(4) Restrictions of Tests/Trials etc
Group Co-ordinator Signature:	Signature:	
Full Acceptance: Field Trial Acceptance only: Surface Only:		
Field Trial to be Supervised by: (Name)	Signature	
Field Trial to be completed at: (Site)		
Field Trial to be completed by: (Date)		

Accepted for Use by UK Coal Mining Ltd

Signed by: 
 Head of Engineering

Date: 3-10-02

(5) Certificate Number: UKC 459G

NB: Attach List of relevant Statutes, Codes, Standards etc compiled within addition to a copy of all reports, drawings, tests etc.
 Acceptance does not imply any form of ordering

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