



## EU-TYPE EXAMINATION CERTIFICATE

Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

Certificate Number: **Sira 01ATEX1230** Issue: **11**

Equipment: **TX6642 Intrinsically Safe Power Supply**

Applicant: **Trolex Ltd.**

Address: Newby Rd  
Hazel Grove  
Stockport  
Cheshire SK7 5DY

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

CSA Group Netherlands B.V., Notified Body Number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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.

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

If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

This EU-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.

The marking of the equipment shall include the following:



I M2 (M1)  
EEx d [ia] I

Project Number      3768

Signed:

Title: Director of Operations

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#### 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 $\mu\text{H}/\Omega$ | 913.7 $\mu\text{F}$               |
| 1.0A      | 1.8 A                        | 9.27 W                  | 44.63 $\mu\text{H}/\Omega$ | 587.2 $\mu\text{F}$               |
| 1.4A      | 3.14 A                       | 17.56 W                 | 21.21 $\mu\text{H}/\Omega$ | 317 $\mu\text{F}$                 |
| 1.8A      | 3.14 A                       | 17.56 W                 | 21.21 $\mu\text{H}/\Omega$ | 317 $\mu\text{F}$                 |

  

| 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 $\mu\text{H}/\Omega$ | 32 $\mu\text{F}$                   |
| 1.0A       | 1.8 A                        | 10.45 W                 | 44.63 $\mu\text{H}/\Omega$ | 32 $\mu\text{F}$                   |
| 1.4A       | 3.14 A                       | 22 W                    | 21.21 $\mu\text{H}/\Omega$ | 19.46 $\mu\text{F}$                |
| 1.8A       | 3.14 A                       | 22 W                    | 21.21 $\mu\text{H}/\Omega$ | 19.46 $\mu\text{F}$                |

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.

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

- The value of the mains fuses to be reased in value from 2 amps to 3.15 amps.
- The upper ambient temperature to be reased to +55°C.
- The change in value of some non-safety related components.

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

- 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.

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

- The modification of the output crowbar circuit.

**Variation 1 Re-issued 24 February 2004** - This variation introduced the following changes:

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

#### Option 1 (original parameters, unchanged)

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

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

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

$U_m$  = 375 V<sub>peak</sub>  
 $I_m$  = 5 A

#### Option 2 (new parameters)

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

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

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

$U_i$  = 30 V  
 $I_i$  = 5 A

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

- The crowbar circuits to be modified to rease 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<br>(8.5V o/p crowbar) | Short circuit<br>current, $I_o$ in A | Max output<br>Power, $P_o$ in W | $L_o/R_o$ Ratio<br>in $\mu H/\Omega$ | Capacitance, $C_o$<br>in $\mu F$ |
|---------------------------------|--------------------------------------|---------------------------------|--------------------------------------|----------------------------------|
| 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<br>(13.0 V o/p crowbar) | Short circuit<br>current, $I_o$ in A | Max output<br>Power, $P_o$ in W | $L_o/R_o$ Ratio<br>in $\mu H/\Omega$ | Capacitance, $C_o$<br>in $\mu F$ |
|------------------------------------|--------------------------------------|---------------------------------|--------------------------------------|----------------------------------|
| 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                            |

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

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

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

- i. The re-settable regulator to be modified.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated CSA Reports and Certificate History

| Issue | Date              | Report number | Comment   |
|-------|-------------------|---------------|---|
| 0     | 11 January 2002   | R52A7663A     | The release of the prime certificate.   |
| 1     | 28 March 2002     | R52M8692A     | The introduction of Variation 1.  |
| 2     | 16 April 2002     | R52M8976A     | The introduction of Variation 2.  |
| 3     | 24 May 2002       | R52A9098A     | The introduction of Variation 3.  |
| 4     | 24 February 2004  | R52A7663B     | Re-issued to allow report number R52A7663A to be replaced by report number R52A7663B.   |
| 5     | 24 February 2004  | R52M8692B     | Re-issued to recognise the re-issue of the prime certificate, to clarify the variations and to allow report number R52M8692B to replace report number R52M8692A.  |
| 6     | 24 February 2004  | R52M8976A     | Variation 2 Re-issued to recognise the re-issue of the prime certificate.   |
| 7     | 24 February 2004  | R52A9098A     | Variation 3 Re-issued to recognise the re-issue of the prime certificate.   |
| 8     | 03 November 2004  | R52A11948A    | The introduction of Variation 4.  |
| 9     | 03 November 2004  | R52A11035A    | The introduction of Variation 5.  |
| 10    | 04 April 2005     | R52A13139A    | The introduction of Variation 6.  |
| 11    | 31st October 2019 | 3768          | <ul style="list-style-type: none"> <li>Transfer of certificate <b>Sira 01ATEX1230</b> from Sira Certification Service to CSA Group Netherlands B.V..</li> <li>All previously issued certification was rationalised into a single certificate, Issue 11, Issues 0 to 10 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>EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. <i>(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)</i></li> </ul> |

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- 15 **SPECIFIC CONDITIONS OF 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 the reports listed in Section 14.2.

# Certificate Annexe



**Certificate Number:** Sira 01ATEX1230

**Equipment:** TX6642 Intrinsically Safe Power Supply

**Applicant:** Trolex Ltd.

## Issue 0

| Drawing     | Sheets | 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  |

## Issues 1 and 4

| Drawing     | Sheets  | Rev. | Date      | Title  |
|-------------|---------|------|-----------|--|
| 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                     |

## Issues 2 and 6

| Drawing  | Sheets  | Rev. | Date      | Title  |
|----------|---------|------|-----------|--|
| P5531.01 | 1 and 2 | C    | 05 Apr 02 | Power Supply, Certified Circuit Diagram And Parts List |

## Issue 3 and 7

| Drawing  | Sheets  | Rev. | Date      | Title  |
|----------|---------|------|-----------|--|
| P5531.01 | 1 and 2 | D    | 22 May 02 | Power Supply, Certified Circuit Diagram And Parts List |

## Issue 5

| Drawing     | Sheets | 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  |

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## Certificate Annexe



**Certificate Number:** Sira 01ATEX1230

**Equipment:** TX6642 Intrinsically Safe Power Supply

**Applicant:** Trolex Ltd.

| Drawing     | Sheets | Rev. | Date      | Title                                       |
|-------------|--------|------|-----------|---|
| 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                    |

### Issue 8

| Drawing  | Sheets | Rev. | Date      | Title                           |
|----------|--------|------|-----------|---------------------------------|
| 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 |

### Issue 9

| Drawing      | Sheets  | Rev. | Date      | Title  |
|--------------|---------|------|-----------|--|
| 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        |

### Issue 10

| Drawing   | Sheets  | Rev. | Date      | Title  |
|-----------|---------|------|-----------|--|
| 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 |

**Issue 11.** No new drawings were introduced.

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