



TX6641 • TX6642 Datasheet & Operating Instructions

Intrinsically Safe Power Supply • 900 mA 12 V dc Output

Environments: Mining • Tunnelling

The power supply converts an ac supply voltage into a stabilized and regulated Intrinsically Safe source for supplying power to approved sensors and electronic control devices.

- Input Voltage: 110 V ac or 230 V ac
- Output Current: 900 mA at 12 V dc
- Certified Intrinsically Safe for use in Group I hazardous areas
- Available in a robust, flameproof housing or an open chassis version for OEM applications
- Both versions available with four intrinsically safe isolation relays for switching remote Exd devices



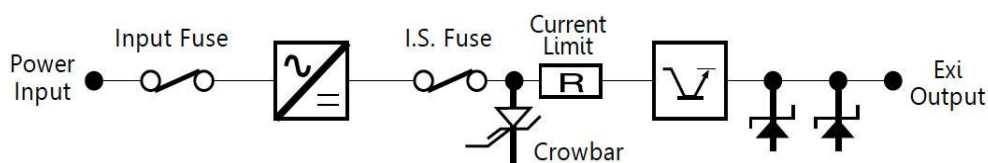
Ex d housing



Open chassis

Technical Information

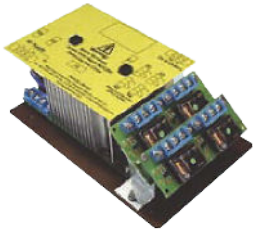
Input Voltage:	110 V ac or 230 V ac	50/60 Hz
Output Voltage:	12 V dc ± 0.2 V	
Output Current:	900 mA maximum	
Maximum Operating temperature:	- 20 °C to + 40 °C	
Storage Temperature:	- 20 °C to + 70 °C	
Humidity:	0 to 95 % RH non-condensing	
Output Ripple/Noise:	150 V max	
Line Regulation:	-5 % over the input voltage range	
Load Regulation:	Better than 5 % over 10 % of load current (-10 % at full load)	
Voltage Limiting:	Over voltage detection with fuse-rupturing 'crowbar' protection & short protection	
Current Limiting :	Automatic current limiting to the intrinsically safe output also limits the current to less than the rupturing capacity of the output protection fuse. 'Reset' the power supply by removing the output load and then reconnecting	
Vibration Limits/Low Frequency :	0.25 mm pk, sinusoidal vibration in the range 10 Hz - 100 Hz in 3 perpendicular planes	
Medium Frequency:	2 g pk, sinusoidal vibration in the range 10 Hz - 600 Hz in 3 perpendicular planes	
Mechanical Shock:	1000 shocks of 40 g minimum in 3 perpendicular planes	





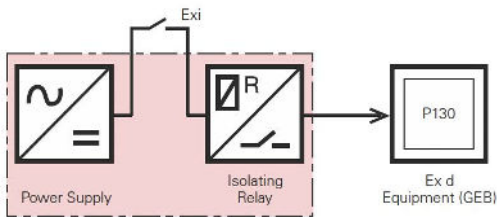
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Isolating Relays



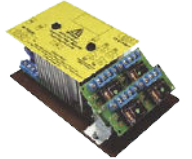
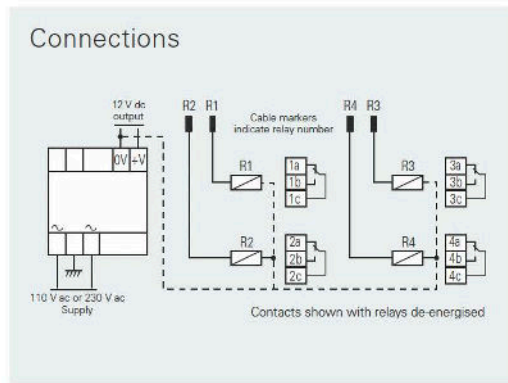
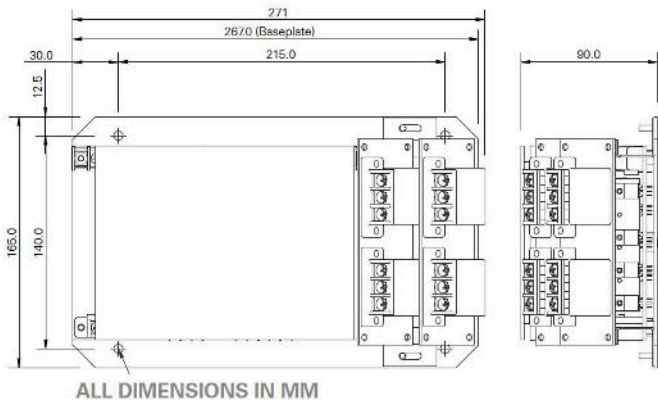
Isolating relays may be combined with a power supply. The operating coils of the relays are Intrinsically Safe and the contacts are clearance compatible for switching non-intrinsically safe apparatus or devices in separate Ex d enclosures (e.g. P130 pilot circuits).

A standard power supply chassis is fitted and wired with four independent relays with field connection facilities for coils and contacts

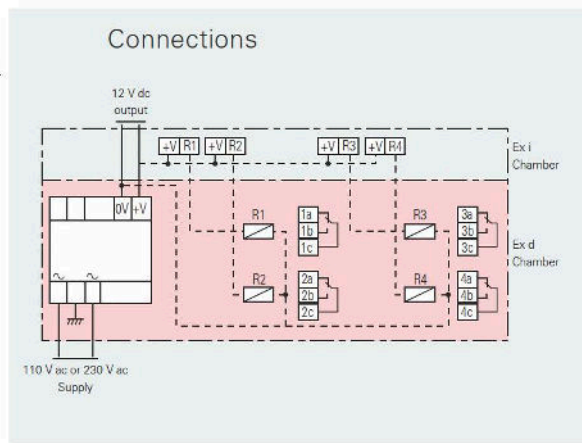
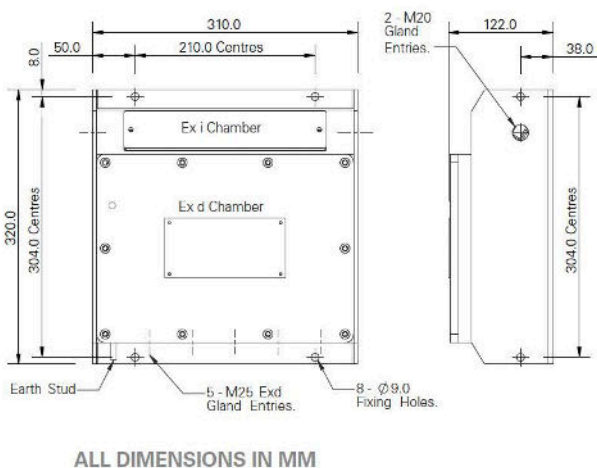


Number of Relays:	4
Contact Type:	One Changeover
Contact Rating:	5 A 230 V ac
Coil Resistance:	460 Ω
Coil Voltage:	12 V dc
Current Consumption per Relay:	26 mA

Intrinsically Safe Power Supply Chassis with Four Isolating Relays



Intrinsically Safe Power Supply in Ex d Housing with Four Isolating Relays





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Order Reference

TX6641 Intrinsically Safe Power Supply Chassis 900 mA 12 V dc Output



With long mounting plate (standard)

		No isolating relays	4 isolating relays
110 V ac input	ATEX/IECEX Grp I	TX6641.35.00.105.101.133.19	TX6641.35.19.105.101.133.19
230 V ac input	ATEX/IECEX Grp I	TX6641.35.00.106.101.133.19	TX6641.35.19.106.101.133.19
110 V ac input	ANZEx Grp I	TX6641.00.105.101.133.10	TX6641.19.105.101.133.10
230 V ac input	ANZEx Grp I	TX6641.00.106.101.133.10	TX6641.19.106.101.133.10
110 V ac input	EAC Grp I	TX6641.00.105.101.133.14	TX6641.19.105.101.133.14
230 V ac input	EAC Grp I	TX6641.00.106.101.133.14	TX6641.19.106.101.133.14

With short mounting plate (OEM)

		No isolating relays	4 isolating relays
110 V ac input	ATEX/IECEX Grp I	TX6641.35.00.105.101.132.19	TX6641.35.19.105.101.132.19
230 V ac input	ATEX/IECEX Grp I	TX6641.35.00.106.101.132.19	TX6641.35.19.106.101.132.19
110 V ac input	ANZEx Grp I	TX6641.00.105.101.132.10	TX6641.19.105.101.132.10
230 V ac input	ANZEx Grp I	TX6641.00.106.101.132.10	TX6641.19.106.101.132.10
110 V ac input	EAC Grp I	TX6641.00.105.101.132.14	TX6641.19.105.101.132.14
230 V ac input	EAC Grp I	TX6641.00.106.101.132.14	TX6641.19.106.101.132.14

TX6642 Intrinsically Safe Power Supply in Ex d Housing 900 mA 12 V dc Output



With long mounting plate (standard)

		No isolating relays	4 isolating relays
110 V ac input	ATEX Grp I	TX6642.35.00.105.101.133.01	TX6642.35.19.105.101.133.01
230 V ac input	ATEX Grp I	TX6642.35.00.106.101.133.01	TX6642.35.19.106.101.133.01
110 V ac input	ANZEx Grp I	TX6642.00.105.101.133.10	TX6642.19.105.101.133.10
230 V ac input	ANZEx Grp I	TX6642.00.106.101.133.10	TX6642.19.106.101.133.10
110 V ac input	EAC Grp I	TX6642.00.105.101.133.14	TX6642.19.105.101.133.14
230 V ac input	EAC Grp I	TX6642.00.106.101.133.14	TX6642.19.106.101.133.14

With short mounting plate (OEM)

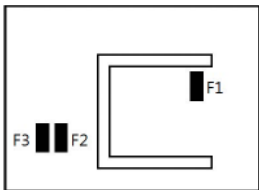
		No isolating relays	4 isolating relays
110 V ac input	ATEX Grp I	TX6642.35.00.105.101.132.01	TX6642.35.19.105.101.132.01
230 V ac input	ATEX Grp I	TX6642.35.00.106.101.132.01	TX6642.35.19.106.101.132.01
110 V ac input	ANZEx Grp I	TX6642.00.105.101.132.10	TX6642.19.105.101.132.10
230 V ac input	ANZEx Grp I	TX6642.00.106.101.132.10	TX6642.19.106.101.132.10
110 V ac input	EAC Grp I	TX6642.00.105.101.132.14	TX6642.19.105.101.132.14
230 V ac input	EAC Grp I	TX6642.00.106.101.132.14	TX6642.19.106.101.132.14



Installation

- Ensure that all covers on Ex d housings and their fixing devices are properly secured in compliance with statutory regulations before switching on the input supply
- Never remove the cover of an Ex d housing whilst the input supply is connected. Isolate elsewhere before removing the cover in accordance with statutory regulations
- The housing of all power supplies must be securely earthed in compliance with statutory regulations. Carry out a current consumption audit to ensure that the maximum current loading of the supply is not exceeded
- Ensure that the installation and connection of the power supply complies with the certification parameters
- Ex d housings must be inspected and maintained regularly in accordance with statutory regulations
- Use only the correct Trolex replacement fuses. Do not substitute any form of equivalent or linking device
- The Ex i power supply must be mounted in an approved Ex d housing when located in a hazardous area
- All cables entering the Ex d housing must be terminated with suitable Ex d certified cable glands.

To Replace a Fuse



F1 = 5.0 A (F) Type S#401.0070

F2 = 3.15 A (F) Type S#401.0062

F3 = 3.15 A (F) Type S#401.0062



Release the quarter-turn fasteners and remove the label



Remove the four M 2.5 countersunk head screws to allow the removal of the top plate assembly



Place the top plate assembly to one side taking care not to strain the connecting wires to the printed circuit board




All the fuses are now accessible






Certification and Conformity

TX6641.35(.xx...) Power Supply Chassis

	ATEX (European Union) certification for use in underground mines (Group I). Complies with ATEX Directive 2014/34/EU.
	Standards: EN IEC 60079-0:2018 EN 60079-11:2012

	IECEx (International) certification for use in underground mines (Group I).
	Standards: IEC 60079-0:2017 IEC 60079-11:2011

Product Code:	Ex Certificate Number:	Ex Certification Code:
TX6641.35.xx.xxx.xxx.xxx.19 Power Supply Chassis	CML 23ATEX2011X IECEx CML 23.0007X	I (M1) [Ex ia Ma] I Ta = -20°C to +55°C

The following Special conditions for Use apply to the certificates listed above:


Specific Conditions of Use pertaining to CML 23ATEX2011X and IECEx CML 23.0007X:

The following conditions relate to safe installation and/or use of the equipment.

- i. When the apparatus is installed within a potentially explosive atmosphere, an additional alternative type of protection as listed in EN IEC/IEC 60079-0 must be provided and installed in accordance with the requirements of EN/IEC 60079-25.
- ii. When the equipment is installed in the safe area, it must be installed in an enclosure providing a degree of protection of not less than IP 20 and installed in accordance with the requirements of EN/IEC 60079-25.



TX6642.35(.xx...) Power Supply

	ATEX (European Union) certification for use in underground mines (Group I). Complies with ATEX Directive 2014/34/EU.
	Standards: EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-11:2012

Product Code:	Ex Certificate Number:	Ex Certification Code:
TX6642.35.xx.xxx.xxx.xxx.01 Power Supply	CML 23ATEX1012X	I M2 (M1) Ex db [ia Ma] I Mb Ta = -20°C to +55°C

The following Special conditions for Use apply to the certificates listed above:

Specific Conditions of Use pertaining to CML 23ATEX1012X:

The following conditions relate to safe installation and/or use of the equipment.

- i. A means of electrical isolation shall be provided on the supply side of the enclosure.
- ii. The cover fixings shall be of grade A2-70 stainless steel or stronger.
- iii. In accordance with clause 5.1 of EN 60079-1, the flameproof joints shall not be repaired; for maintenance or repairs contact the manufacturer.
- iv. Only suitably certified cable gland, blanking elements and line bushings shall be used.
- v. The equipment is fitted internally with a line bushing that is not serviceable or replaceable by the end user. For repairs and maintenance contact the manufacturer.

Intrinsic safety parameters

The intrinsic safety parameters listed below apply to the following variants:

- TX6641.35.xx.xxx.xxx.xxx.19 (CML 23ATEX2011X & IECEx CML 23.0007X)
- TX6642.35.xx.xxx.xxx.xxx.01 (CML 23ATEX1012X)

Input parameters:

Variant	Um
24 Vac	26.4 V rms
110 Vac	121 V rms
230 Vac	253 V rms



Output parameters:

Variant	Uo	Io	Po	Co	Lo/Ro
7.5 Vdc, 500 mA	8.5 V	0.873 A	5.28 W	646 µF	72.69 µH/Ω
12 Vdc, 900 mA	13 V	1.76 A	12.73 W	30.29 µF	36.17 µH/Ω

Relay parameters:

Option 1		I.S. circuit terminals 3,5,7,9 wrt 0 V	Non-I.S. circuit to relay contact terminals a, b and c of Relays 1 – 4	
Variant	Relay type	Ui	Um	Im
7.5 Vdc, 500 mA	9 V	8.5 V	375 V peak	5 A
12 Vdc, 900 mA	12 V	13 V		

Option 2		Non-I.S. circuit terminals 3,5,7,9 wrt 0 V	I.S. circuit to relay contact terminals a, b and c of Relays 1 – 4	
Variant	Relay type	Um	Ui	Ii
7.5 Vdc, 500 mA	9 V	8.5 V	30 V peak	5 A
12 Vdc, 900 mA	12 V	13 V		

TX6641(.xx...) Power Supply Chassis

ANZEx	ANZEx certification for use in underground mines (Group I) in Australia.
	Standards: IEC 60079-0:2011 IEC 60079-11:2011

EAC Ex	EAC certification for use in underground mines in Eurasian Customs Union (including Russia).

Product Code:	Ex Certificate Number:	Ex Certification Code:
TX6641.xx.xxx.xxx.xxx.10 Power Supply Chassis	ANZEx 14.3006X	[Ex ia] I Ta = -20°C to +55°C
TX6641.xx.xxx.xxx.xxx.14 Power Supply Chassis	RU C-GB.AA87.B.00155/19	[Ex ia Ma] I X Ta = -20°C to +55°C



The following Special conditions for Use apply to the certificates listed above:

Specific Conditions of Use pertaining to ANZEx 14.3006X:

- i. It is a condition of safe use that the Power Supply TX6641 must be housed in a suitably certified Ex d enclosure when used in a hazardous area. When used in a non-hazardous area it must be housed inside an enclosure that affords a degree of protection of at least IP20.
- ii. It is a condition of safe use that the TX6641 circuits must have infallible creepage and clearance distances to the enclosure walls, as defined by clause 6.3 of IEC 60079-11.
- iii. It is a condition of safe use that the connections to the relay boards must both be configured as either to IS circuits or non-IS circuits. It is not permitted to mix the connection of IS and non-IS circuits to these relays.
- iv. It is a condition of safe use that the wiring carrying non-hazardous area circuits to the relays must be routed to ensure that they are segregated from hazardous area circuits, maintaining compliance with Table 5 of IEC 60079-11:2011, namely 6 mm of clearance through air and/or 1 mm clearance through solid insulation.
- v. It is a condition of safe use that the following parameters are taken into account in the installation:

Product Code	PSU Type	Uo	Io	Po	Co	Lo/Ro
109.1205	7.7 V 0.5 A	8.5 V	0.873 A	5.28 W	646 µF	72.69
109.1204	7.7 V 1.0 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
109.1203	7.7 V 1.4 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
109.1202	7.7 V 1.8 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
101.1205	12.35 V 0.5 A	13.0 V	0.873 A	6.33 W	32 µF	72.69
101.1204	12.35 V 1.0 A	13.0 V	1.76 A	12.73 W	30.29 µF	36.17
101.1203	12.35 V 1.4 A	13.0 V	2.38 A	17.23 W	19.46 µF	26.72
101.1202	12.35 V 1.8 A	13.0 V	2.38 A	17.23 W	19.46 µF	26.72
101.1204 (alt)	12.35 V 1.0 A	12.35 V	1.8 A	10.45 W	30 µF	44.63

Product code	PSU Type	Um (Terminals marked "ac Supply")
103	24 V rms supply	26.4 V rms
105	110 V rms supply	121 V rms
106	230 V rms supply	253 V rms

Product code	PSU Type	Terminals marked R1, R2, R3, R4	
19	Fitted with Relay Board	Um: 375 V rms	Im: 5 A rms
		or	
		Ui: 30 V	Ii: 5 A



TX6642(.xx...) Power Supply

ANZEx	ANZEx certification for use in underground mines (Group I) in Australia.
	Standards: IEC 60079-0:2007 IEC 60079-0:2011 IEC 60079-1:2007 IEC 60079-11:2011

EAC Ex	EAC certification for use in underground mines in Eurasian Customs Union (including Russia).
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Product Code:	Ex Certificate Number:	Ex Certification Code:
TX6642.xx.xxx.xxx.xxx.10 Power Supply	ANZEx 14.3001X	Ex d [ia] I Mb Ta = -20°C to +55°C
TX6642.xx.xxx.xxx.xxx.14 Power Supply	RU C-GB.AA87.B.00155/19	PB Ex d [ia Ma] I Mb Ta = -20°C to +55°C

The following Special conditions for Use apply to the certificates listed above:

Specific Conditions of Use pertaining to ANZEx 14.3001X:

- i. It is a condition of specific use that the flamepath dimensions will be maintained in accordance with dimensions detailed in drawing P5531-02-02.
- ii. It is a condition of safe use that installation entry to the main compartment shall be via suitably Ex d certified cable gland.
- iii. It is a condition of safe use that the connections to the relay boards must both be configured as either to IS circuits or non-IS circuits. It is not permitted to mix the connection of IS and non-IS circuits to these relays.



iv. It is a condition of safe use that the following parameters are taken into account in the installation:

Product Code	PSU Type	Uo	Io	Po	Co	Lo/Ro
109.1205	7.7 V 0.5 A	8.5 V	0.873 A	5.28 W	646 µF	72.69
109.1204	7.7 V 1.0 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
109.1203	7.7 V 1.4 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
109.1202	7.7 V 1.8 A	8.5 V	1.76 A	10.63 W	560 µF	36.17
101.1205	12.35 V 0.5 A	13.0 V	0.873 A	6.33 W	32 µF	72.69
101.1204	12.35 V 1.0 A	13.0 V	1.76 A	12.73 W	30.29 µF	36.17
101.1203	12.35 V 1.4 A	13.0 V	2.38 A	17.23 W	19.46 µF	26.72
101.1202	12.35 V 1.8 A	13.0 V	2.38 A	17.23 W	19.46 µF	26.72
101.1204 (alt)	12.35 V 1.0 A	12.35 V	1.8 A	10.45 W	30 µF	44.63

Product code	PSU Type	Um (Terminals marked "ac Supply")
103	24 V rms supply	26.4 V rms
105	110 V rms supply	121 V rms
106	230 V rms supply	253 V rms

Product code	PSU Type	Terminals marked R1, R2, R3, R4	
19	Fitted with Relay Board	Um: 375 V rms	Im: 5 A rms
		or	
		Ui: 30 V	Ii: 5 A

Installation of equipment

The installation of the product must only be carried out by competent personnel. Each installation needs to be considered with reference to the local safety regulations and authorities. Refer to the following standards for additional guidance:

- IEC/EN 60079-14
- IEC/EN 60079-25

Refer to the Certification Section of this User Manual and to the relevant certificates for any installation parameters and special conditions of safe use.

Commissioning / verification tests prior to first use.

Prior to commissioning and first use, the product shall be inspected for any visible damages and integrity of the enclosure. Never use the product that has damaged housing in hazardous locations.



Maintenance

The maintenance of the product must only be carried out by competent personnel. Maintenance shall be considered with reference to the local safety regulations and authorities. Refer to the following standards for additional guidance:

- IEC/EN 60079-17

It is recommended to periodically check the condition of the product.

The product is marked with the following warning:

WARNING - DO NOT OPEN WHEN ENERGISED

The product shall only be serviced and repaired by Trolex Ltd. or a local Trolex service agent approved by Trolex Ltd in order to maintain the explosion protection of the product.

At Trolex, we save lives.

We believe that no person should risk their life to earn a living.

Our aim is to become the world's leading name in health and safety technology, pioneering products that provide real-world benefits to our customers, whenever workers operate in hazardous environments.

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