



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx ITA 12.0006X Issue No: 2 Certificate history:
Status: **Current** Issue No. 2 (2017-04-28)
Date of Issue: **2017-04-28** Page 1 of 4 Issue No. 1 (2015-07-01)
Applicant: **Austdac Pty Ltd** Issue No. 0 (2012-05-28)
Unit 1, 42 Carrington Road,
Castle Hill, NSW 2154
Australia
Equipment: **ST2 Telephone Exchange Interface Barrier**
Optional accessory: Type A103 Telephone
Type of Protection: **Intrinsic Safety**
Marking:
[Ex ia] I (ST2 Telephone Exchange)
Ex ia I (A103 Telephone)

Approved for issue on behalf of the IECEx
Certification Body:

David Price

Position:

Certification Authority

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

TUV Rheinland Australia Pty. Ltd
1/30 Kennington Drive
Tomago NSW 2322
Australia





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Manufacturer: **Austdac Pty Ltd**
Unit 1, 42 Carrington Road,
Castle Hill, NSW 2154
Australia

Additional Manufacturing location(s):

Dongguan Hubbell Electrical Products Company Limited
Xincheng Industrial Zone
Hengli Town, Dongguan City
523460, Guangdong
China

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2004 Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition:4.0
IEC 60079-11 : 2006 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:5
IEC 60079-25 : 2003 Electrical apparatus for explosive gas atmospheres – Part 25 Intrinsically safe systems
Edition:1

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[AU/ITA/ExTR12.0017/00](#) [AU/ITA/ExTR12.0018/00](#) [AU/ITA/ExTR12.0019/00](#)
[AU/ITA/ExTR12.0020/00](#) [AU/ITA/ExTR15.0008/00](#)

Quality Assessment Report:

[AU/ITA/QAR06.0001/11](#) [AU/ITA/QAR15.0002/01](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The ST2 provides an intrinsically safe interface barrier between the Public Switched Telephone Network (PSTN) and the private Mine phone network.

A ST2 system physically consists of three main parts: the cabinet(s) which holds the ST2 Intrinsically Safe Interface Barrier system, the A103 Intrinsically Safe Telephone and the phone cable.

Refer attachment for further details

SPECIFIC CONDITIONS OF USE: YES as shown below:

See Annex for details



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

See Annex for details

Annex:

[IECEX ITA 12.0006X-2 Annex corrected.pdf](#)

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Equipment description pertaining to Issue 0 of this certificate:

Continued from the 'Equipment' section of the certificate:

The ST2 Telephone System comprises of the following modules;

- Power Input Module Type ST2-PIM
- Power Distribution and Limiter Type ST2-PDL
- Interface/Barrier Type ST2-IB
- Backplane Type ST2-BSB
- Minephone Side Termination Type ST2-MT

The Telephone type A103 is used in the hazardous area.

Power Distribution and Limiter Type ST2-PDL printed wiring board provides voltage limitation for rating purposes via triplicated crowbar voltage limiting circuits.

Interface/Barrier Type ST2-IB printed wiring board provides voltage and current limitation to hazardous area output connections via triplicated voltage limiting circuits and infallible series current limiting resistors as well as maintaining galvanic isolation of signalling circuits via opto-couplers.

The Backplane Type ST2-BSB allows connections between the ST2-PIM and appropriately certified modules.



The Type ST2-PDL & ST2-IB comprise electronic components mounted on single double layer printed wiring board, fitted with integral plug and socket connections for connection to the Backplane.

The Backplane Type ST2-BSB is a multilayer printed wiring board upon which is mounted passive resistive components and plug in connectors that allow connections between the ST2-PIM and appropriately certified modules.

The Minephone Side Termination Type ST2-MT is a double layer printed wiring board upon which is mounted passive components and plug in connectors that allow connections between the ST2-BSB and appropriately certified hazardous area modules.

The ST2 system can work either in stand-alone mode or with Austdac's Phone Manager II GUI.

The ST2 can accommodate up to 79 lines per cabinet and additional cabinet(s) can be used to accommodate to multiple of 79 lines.

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Conditions of Manufacture pertaining to Issue 0 of this certificate:

Nil

Conditions of certification pertaining to Issue 0 of this certificate:

ST2-IB Output Connections Parameters

The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area load connected the hazardous area connections must not exceed the following values:

X11	
Per telephone line (circuit)	
$U_{o=}$	27.24 V
$I_{o=}$	130 mA
$P_{o=}$	885.4 mW
$C_{o=}$	3.6 μ F
$L_{o=}$	27.6 mH
$C_{i=}$	Negligible μ F
$L_{i=}$	Negligible mH
$L/R\ Ratio=$	527 μ H/ Ω

The above load parameters apply where;

- The external circuit contains no combined lumped inductance (L_i) or lumped capacitance (C_i) greater than 1% of the above values. Or
- The external circuit contains either only lumped inductance (L_i) or lumped capacitance (C_i) in combination with a cable. Or
- The inductance and capacitance are distributed as in a cable.

In all other situations e.g. the external circuit contains combined lumped inductance and capacitance, up to 50% of each of the inductance and capacitance values are allowed.

Telephone Type A103 Input/Output Parameters

Terminals 1 to 5		
$U_{i=}$	27.3 V	$U_{o=}$ 9.6 V Note2
$I_{i=}$	500 mA Note1	$I_{o=}$ 0 mA
$P_{i=}$	3.54 W	$P_{o=}$ 0 mW
$C_{i=}$	220 nF	
$L_{i=}$	negligible mH	

Note 1. Supply must be via a suitably certified resistive current limited source (54.6 Ω min).

Note 2. This voltage is considered to be the maximum voltage from the internal battery supply that may charge up capacitance via the series blocking diodes.

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Terminals B1, B2 (Relay Contact terminals)		
$U_i=$	25 V	$U_o= 0 V$
$I_i=$	2.5 A	$I_o= 0 mA$
$P_i=$	5.0 W	$P_o= 0 mW$
$C_i=$	negligible nF	
$L_i=$	negligible mH	$U_m= 100 V$ VNote3

Note 3. Only to be connected when the A103 Telephone is located in a non-hazardous (safe) area.

Programming port CON8	
$U_i= 0 V$	$U_m= 16 V$ VNote4

Note 4. Only to be connected when the A103 Telephone is located in a non-hazardous (safe) area.

As the Telephones Type A103 contain only negligible inductance the maximum capacitance of the cabling and Telephone Type A103 must not exceed 3.6 μ F. Each Telephone Type A103 has a C_i of 220 nF.

The maximum number of Telephone Type A103 that can be connected to each telephone line contained in the Type A or B Multicore cable is 16 with a cable capacitance less than 80nF. However the maximum number of phones per hazardous area telephone line is limited to three by functionality, therefore limiting the cable parameters are 2.94 μ F, 27.6 mH and L/R = 527 μ H/ Ω .

Type C Cables

With the maximum of 2 short circuit faults and simultaneously up to four open circuit faults applied within the Type C cable it is possible to interconnect a maximum total of 3 telephone lines (circuits).

X11 Three telephone lines (circuits) combined	
$U_o=$	27.24 V
$I_o=$	390 mA
$P_o=$	2.66 W
$C_o=$	3.6 μ F
$L_o=$	3.06 mH
$C_i=$	Negligible μ F
$L_i=$	Negligible mH
L/R $Ratio=$	175 μ H/ Ω

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The maximum number of Telephone Type A103 that can be connected to each telephone line contained in the Type C Multicore cable is 16 with a cable capacitance less than 80nF. However the maximum number of phones per hazardous area telephone line is limited to three by functionality, therefore limiting the cable parameters are 2.94 uF, 3.06 mH * and L/R = 175 µH/Ω.

It is a condition of safe use:

- Only Type A or Type B or Type C cables be used for the installation. If a Type B or Type C cables are used then it must be fixed in place and mechanically protected throughout the installation.
- All common 0 V connections on each Telephone System Type ST2 must be infallibly interconnected to prevent series addition of the supplies.

It is a condition of manufacture that the ST2-PIM transformer is subject to a routine type test of 2,500 V rms min. between windings and 1,000 V rms min. between windings and earthed screen for at least 60 s. Alternatively the tests may be 3,000 V rms min. between windings and 1,200 V rms min. between windings and earthed screen for at least 1 s.

(* By an editorial error, this was earlier 27.6 mH. Corrected on 2017-12-07 to 3.06 mH)

Drawings pertaining to Issue 0 of this certificate:

Manufacturer's Documents			
Title:	Drawing No.:	Rev. Level:	Date:
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB PCB0236A SCHEMATIC DIAGRAM	27-032-03 Sheets 1 & 2	04	2012/02/15
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB PCB0236A ARTWORK DETAILS	27-033-21 Sheets 1 to 5	04	2011/10/28
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB PCB0236A BILL OF MATERIALS	27-034-14 Sheets 1 & 2	04	2012/02/15
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB PCB0236A COMPONENT LOADING DIAGRAM	27-035-07 Sheets 1 & 2	02	2012/03/07
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB ASSEMBLY DIAGRAM	27-036-04 Sheets 1 to 3	01	2011/12/12
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB REAR COVER MECHANICAL DETAILS	27-038-06	03	2012/03/30
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB REAR TOP MECHANICAL DETAILS	27-039-06	02	2012/03/14
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB REAR COVER MECHANICAL DETAILS	27-082-13	02	2012/03/30
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A SCHEMATIC DIAGRAM	27-062-03	04	2011/09/15
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A ARTWORK DETAILS	27-063-21 Sheets 1 to 3	05	2012/05/01
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A BILL OF MATERIALS	27-064-14 Sheets 1 to 3	05	2011/12/07
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A COMPONENT LOADING DIAGRAM	27-065-07 Sheets 1 to 4	04	2012/05/07

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Title:	Drawing No.:	Rev. Level:	Date:
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL ASSEMBLY DETAILS	27-066-04 Sheets 1 to 4	01	2011/12/07
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL LABEL DETAILS	27-068-13	01	2011/11/07
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB SCHEMATIC DIAGRAM	27-072-03 Sheets 1 to 9	08	2012/03/26
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB PCB0240A ARTWORK DETAILS	27-073-21 Sheets 1 to 5	06	2012/03/27
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB PCB0240A BILL OF MATERIALS	27-074-14 Sheets 1 to 4	07	2012/03/26
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB PCB0240A COMPONENT LOADING DIAGRAM	27-075-07	02	2012/03/27
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB ASSEMBLY DETAILS	27-076-04 Sheets 1 to 4	02	2012/03/27
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB LABEL DETAILS	27-078-13	01	2011/11/07
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB I.S. ANALYSIS BLOCK DIAGRAM	27-079-02 Sheets 1 to 5	03	2010/10/11
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB MAYBE CONFORMAL COAT PROCEDURE	27-080-17	01	2011/12/07
TELEPHONE INTERFACE / BARRIER TYPE ST2 MINEPHONE SIDE TERMINATION SCHEMATIC DIAGRAM	27-172-03	02	2011/10/27
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT PCB0297A ARTWORK DETAILS	27-173-21 Sheets 1 to 3	02	2011/10/27
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT BILL OF MATERIALS	27-174-14 Sheets 1 & 2	02	2011/11/25
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT PCB0297A COMPONENT LOADING DIAGRAM	27-175-07 Sheets 1 & 2	01	2011/12/02
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT ASSEMBLY DETAILS	27-176-04	01	2011/11/25
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT MECHANICAL DETAILS	27-186-06	02	2011/11/24
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT COVER MECHANICAL DETAILS	27-187-06	03	2012/03/30
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL FRONT PANEL MECHANICAL DETAIL	27-180-06	01	2009/11/23
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL SIDE PANEL MECHANICAL DETAIL	27-181-06	02	2010/12/16
TELEPHONE INTERFACE BARRIER TYPE ST2-IB FRONT PANEL MECHANICAL DETAIL	27-182-06	02	2010/11/25
ST2-IB SIDE PANEL MECHANICAL DETAIL	27-183-06	04	2011/11/23
ST2-IB HEAT SINK MECHANICAL DETAIL	27-184-06	02	2012/03/12
ST2-IB HEATSINK MOUNT MECHANICAL DETAIL	27-185-06	01	2011/03/15
* PIM Module drawings documented in Test Report 19400018-001			

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Equipment description pertaining to Issue 1 of this certificate:

There are no changes to the equipment description for this issue.

Changes pertaining to Issue 1 of this certificate:

1. Modifications to the A103 Module - The A103 metal work was modified to improve the production process.
2. Modifications to the ST2-BSB Module - The ST2-BSB backplane metal work was modified to add labels and to align holes with the PCB.
3. Modifications to the ST2-IB Module
 - A) The ST2-IB backplane metal work was modified for to add labels and to align holes with the PCB.
 - B) Removal of Non IS related components.
4. The ST2-MT was modified to improve serviceability. This change affects the PCB, terminal blocks and overall assembly.
5. The ST2-PDL Module has been revised to give a higher internal operating voltage and does not affect the operating parameters.

Conditions of Manufacture pertaining to Issue 1 of this certificate:

There are no changes to the conditions of manufacture for this issue.

Conditions of certification pertaining to Issue 1 of this certificate:

There are no changes to the conditions of certification for this issue.

Drawings pertaining to Issue 1 of this certificate:

Manufacturer's Documents			
Title:	Drawing No.:	Rev. Level:	Date:
A103			
LABEL: CERT ISMT A103 MINE TELEPHONE	502-02-0500-001 Sheets 1 of 1	006	2014-07-08
ST2-BSB			
TELEPHONE BARRIER SYSTEM BACKPLANE TYPE ST2-BSB REAR COVER MECHANICAL DETAILS	27-038-06 Sheets 1 of 1	05	2012-11-02
ST2-IB			
TELEPHONE INTERFACE BARRIER TYPE ST2 SCHEMATIC DIAGRAM	27-072-03 Sheets 00 to 09	09	2013-12-16
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB BILL OF MATERIALS	27-074-14 Sheets 1 to 4	08	2013-12-16

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Title:	Drawing No.:	Rev. Level:	Date:
TELEPHONE INTERFACE / BARRIER TYPE ST2-IB PCB0240A Component Loading Diagram	27-075-07 Sheets 1 to 2	04	2013-12-16
ST2-IB SIDE PLATE MECHANICAL DETAILS	27-183-06 Sheets 1 of 1	05	2014-07-24
ST2-PDL			
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A SCHEMATIC DIAGRAM	27-062-03	05	2014/02/06
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A ARTWORK DETAILS	27-063-21 Sheets 1 to 4	06	2014/05/02
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A BILL OF MATERIALS	27-064-14 Sheets 1 to 3	07	2014/05/01
TELEPHONE POWER DISTRIBUTION LIMITER TYPE ST2-PDL PCB0239A COMPONENT LOADING DIAGRAM	27-065-07 Sheets 1 of 1	05	2014/05/02
ST2-MT			
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT SCHEMATIC DIAGRAM	27-172-03 Sheets 0 & 1	03	2014/05/13
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT PCB0297A ARTWORK DETAILS	27-173-21 Sheets 1 to 3	03	2014/05/19
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT BILL OF MATERIALS	27-174-14 Sheets 1 to 3	03	2014/05/28
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT PCB0297A COMPONENT LOADING DIAGRAM	27-175-07	02	2014/05/21
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT ASSEMBLY DETAILS	27-176-04	02	2014/05/20

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Title:	Drawing No.:	Rev. Level:	Date:
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT CHASSIS MECHANICAL DETAILS	27-186-06	03	2014/05/28
TELEPHONE MINESIDE TERMINATION TYPE ST2-MT COVER MECHANICAL DETAILS	27-187-06	04	2014/05/20

Variations permitted by Issue 2 of this certificate:

- Change in address of the manufacturer. QAR has been updated.
- Minor editorials to the certificate to transfer to new template.

Conditions pertaining to Issue 2 of this certificate:

No variations from the earlier certificate.

Drawings Associated with the Issue 2 of this Certificate:

Nil.