IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx TSA 07.0002X**

Page 1 of 5

Status: **Current**

Issue No: 16

Date of Issue: 2022-08-30

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

Equipment: **Contact Monitoring System Type Dupline 128**

Optional accessory:

Type of Protection: **Intrinsic Safety "ia"**

Marking: Ex ia I

Certificate history:

Issue 15 (2020-03-26)
Issue 14 (2018-11-13)
Issue 13 (2018-03-21)
Issue 12 (2017-05-11)
Issue 11 (2016-05-05)
Issue 10 (2015-10-06)
Issue 9 (2015-07-31)
Issue 8 (2012-08-03)
Issue 7 (2011-09-13)
Issue 6 (2011-05-13)

Approved for issue on behalf of the IECEx Certification Body: **Ujen Singh**

Position: **Quality & Certification Manager**

Signature: (for printed version)

Date: (for printed version) 30 August 2022

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 www.iecex.com or use of this QR Code.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753
Australia

IECEx Certificate of Conformity

Certificate No.: **IECEx TSA 07.0002X**

Date of issue: 2022-08-30

Issue No: 16

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

Manufacturing locations:

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

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

Hubbell Ltd T/A GAI-TRONICS (A Division of Hubbell Limited) and Metron Eledyne
Brunel Drive
Stretton Business Park
Burton-Upon-Trent
Staffordshire
DE13 0BZ
United Kingdom

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 equipment 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 60079-0:2000 Edition:3.1 — Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

IEC 60079-11:1999 Edition:4 — Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

This Certificate **does not** indicate compliance with 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 Reports:

AU/TSA/ExTR08.0009/00
AU/TSA/ExTR08.0064/00
AU/TSA/ExTR09.0064/00
AU/TSA/ExTR11.0015/00
AU/TSA/ExTR11.0031/00
AU/TSA/ExTR12.0032/00
AU/TSA/ExTR13.0045/00
AU/TSA/ExTR16.0010/00
AU/TSA/ExTR18.0005/00
AU/TSA/ExTR18.0025/00
AU/TSA/ExTR18.0025/01
AU/TSA/ExTR18.0025/02

Quality Assessment Reports:

AU/ITA/QAR06.0001/16
AU/ITA/QAR15.0002/07
GB/BAS/QAR06.0039/11

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Dupline 128 system is an intrinsically safe communications and power system. For details of this system and components, refer to drawing 76-001-19. The system consists of several apparatus connected to a “Dupline loop” that allows transfer of the communication across the apparatus. The voltage on this loop is a maximum of 8.6 V and a maximum power of 2.5 W.

The power source of this loop is a separately certified power supply that provides an intrinsically safe output, or a separately certified barrier, or a Belt Controller 8081. The loop contains several apparatus that are powered from the power in the loop, and also some that have an additional source of intrinsically safe power. However, galvanic isolation between such other source of power and the Dupline loop circuits prevent addition of power and voltage to the Dupline loop.

The Dupline loop may also be extended to further loops using a Repeater A2WCCT1. This Repeater shall be powered from another separately certified power supply with an intrinsically safe output, and this provides power and communication signals to the next loop while providing galvanic isolation from the previous loop.

For further system description, please refer to the Annexe.

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer to Annexe of the certificate.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Details of certificates changes for Issue 16:

Some changes in Dual Port Channel Generator type GSW1-AC and GSW1-DC. They were assessed in Test Reports 37605 & 37606 respectively. The system is not affected. The system description was updated accordingly.

IECEx Certificate of Conformity

Additional information:
None

Annex:

Annexe_IECEx TSA 07 0002X-16.pdf

IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 07.0002X	Issue No.:	16

Equipment description continue:

The system consists of the following apparatus:

Item #	Designation	Type	IECEx Certificate / ExTR number	Standards with Editions	Ex marking code
1	Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19.				
2	Barrier	Z960	IECEx SIM 06.0012X	IEC 60079-0:2000, IEC 60079-11:1999	[Ex ia] I
3	Belt Controller	8081	TR21388	IEC 60079-0:2000 IEC 60079-11:1999	[Ex ia] I
4	Channel Generator	DEX 3490 0000 712	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
5	Programmer GAP	1605	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
6	Zener Limiter	AEL1	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
7	Repeater	A2WCCT1	TR21313	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
8	Repeater	A2WCCT2	AU/TSA/ExTR10.0031/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I [Ex ia] I
9	4 channel Analog Transmitter	ATX4A	TR21349	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
10	8 channel Digital Transmitter	8084	TR21355	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
11	Termination unit	R1+D1	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
12	Termination unit	DT01	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
13	Analog Receiver	ARX8A	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
14	Digital Receiver	ARX4D	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
15	Test Unit	GTU8	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
16	Analog Transmitter	G3210 1161	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
17	Temperature Transmitter	G3210 1112	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 07.0002X	Issue No.:	16

Item #	Designation	Type	IECEx Certificate / ExTR number	Standards with Editions	Ex marking code
18	Digital Transmitter	8023	TR24906	IEC 60079-0:2000 IEC 60079-11:1999	Ex ia I
19	Safety Transmitter	8150	TR27056	IEC 60079-0:2004 IEC 60079-11:1999	Ex ia I
20	Tail End Unit	TEU2	AU/TSA/ExTR07.0059/00	IEC 60079-0:2004 IEC 60079-11:1999	Ex ia I
21	Single Channel Digital Transmitter	8161	AU/TSA/ExTR10.0041/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
22	Eight Channel Digital Transmitter	8163	AU/TSA/ExTR10.0042/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
23	Dual Port Channel Generator	GSW1-AC	AU/TSA/ExTR08.0021/01	IEC 60079-0:2004 IEC 60079-11:2006	[Ex ia] I
24	Dual Port Channel Generator	GSW1-DC	AU/TSA/ExTR08.0020/01	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
25	Four channel analogue transmitter	TX4A	AU/TSA/ExTR16.0008/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
26	Four channel analogue receiver	RX4A	AU/TSA/ExTR09.0050/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
27	Four channel digital transmitter	TX4D	AU/TSA/ExTR09.0048/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
28	Four channel digital receiver	RX4D	AU/TSA/ExTR09.0051/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
29	Termination Unit	OAS1-BEG	AU/TSA/ExTR10.0030/00	IEC 60079-0:2004 IEC 60079-11:2006	[Ex ia] I
30	Termination Unit	OAS1-END	AU/TSA/ExTR10.0030/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
31	Network Bridge	SNB1	AU/TSA/ExTR10.0032/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I [Ex ia] I
32	Single Channel Temperature Transmitter	TX1T	AU/TSA/ExTR11.0021/01	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
33	Dual Channel Frequency Transmitter	TX2F	AU/TSA/ExTR11.0022/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
34	Network Monitor	SNM1-EOL	AU/TSA/ExTR12.0031/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 07.0002X	Issue No.:	16

Item #	Designation	Type	IECEx Certificate / ExTR number	Standards with Editions	Ex marking code
35	Network Monitor	SNM1-ELD	AU/TSA/ExTR12.0031/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
36	Uninterruptible Power Supply	12/NMH/288	IECEx TSA 13.0017X	IEC 60079-0:2011 IEC 60079-11:2011 IEC 60079-18:2009	Ex eb ia mb [ia Ma] I Mb Ex ia ma I Ma
37	Intrinsically Safe CM Filter	CMF1	AU/TSA/ExTR14.0002/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
38	SILBUS Series Resistor	SR1	AU/TSA/ExTR14.0002/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
39	Display Trip Amplifier	ABBD2	IECEx MSC 14.0020X	IEC 60079-0:2011 IEC 60079-11:2011	Ex ia I Ma
40	4 Channel Indicator Output Transceiver	BLIP2	AU/TSA/ExTR16.0001/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
41	Multi-colour Indicator	IND2	AU/TSA/ExTR16.0001/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
42	Modbus Bridge	MB1	AU/TSA/ExTR16.0007/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I
43	Hand Held Programmer	HHP1-S	AU/TSA/ExTR17.0014/00	IEC 60079-0:2011 IEC 60079-11:2011	Ex ia I Ma
44	Universal Bridge	SUB1	AU/TSA/ExTR18.0014/00	IEC 60079-0:2011 IEC 60079-11:2011	Ex ia I Ma
45	4 Channel Transceiver	TX2F-RX2A	AU/TSA/ExTR19.0014/00	IEC 60079-0:2004 IEC 60079-11:2006	Ex ia I

* Note: The Dupline bus allows any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels is allowable.

** Note: The item GSW1-AC/DC provides a new bus output called “SILBUS”. This is described in drawings 120-002-19 and 120-003-19. This connects to the original bus using zener limiter AEL1 shown in 120-003-19.

*** Note: Associated apparatus shall be installed in safe area, item # 36 shall be installed either in Zone 1 area or safe area when power is on.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 07.0002X	Issue No.:	16

Drawing list pertaining to Issue 16 of this Certificate:

Drawing / Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
120-002-19	6	SILBUS Fieldbus Loads Certification System Diagram	11	2019-08-16
120-807-19	1	SILBUS 4 Channel Transceiver Type SILBUS-TX2F-RX2A Certification Diagram	01	2019-08-23
120-815-13	1	SILBUS Transceiver Type SILBUS-TX2F-RX2A Certification Labels Label Details	01	2020-03-12
76-001-19	5	Dupline 128 (SILBUS) System Details System Wiring	21	2007-10-23
76-130-13	1	Dupline 128 Contact Monitoring System Label Details	1	2007-01-12
120-001-19	3	*SILBUS Fieldbus Controllers Certification System Diagram	05	2009-09-04
120-191-19	1	SILBUS 4 Channel Analogue Transmitter Type SILBUS-TX4A Connection System Diagram	04	2010-09-07
120-211-19	1	SILBUS 4 Channel Analogue Receiver Type SILBUS-RX4A Connection System Diagram	04	2010-09-27
120-231-19	1	SILBUS 4 Channel Digital Transmitter Type SILBUS-TX4D Connection System Diagram	05	2010-09-27
120-251-19	1	SILBUS 4 Channel Digital Receiver Type SILBUS-RX4D Connection System Diagram	04	2010-09-27
120-004-19	2	SILBUS Fieldbus Repeater & Bridge Certification System Diagram	01	2010-09-13
120-151-19	1	SILBUS Network Bridge Type SILBUS-SNB1 Connection System Diagram	01	2011-02-25
120-324-19	1	SILBUS Repeater Type SILBUS-A2WCCT2 Connection System Diagram	02	2011-05-06
120-342-19	1	SILBUS Termination Unit Type SILBUS-OAS1 Connection System Diagram	03	2011-02-25
120-362-19	1	SILBUS Single Channel Temperature Transmitter Type SILBUS-TX1T Connection System Diagram	02	2011-07-12
120-382-19	1	SILBUS Dual Channel Frequency Transmitter Type SILBUS-TX2F Connection System Diagram	03	2011-07-12
61-164-19	1	Intrinsically Safe Ex ia UPS Type 12/NMH/288 Connection System Diagram	02	2014-11-17
120-003-19	2	SILBUS Fieldbus Barriers Certification System Diagram	04	2014-09-19

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

Drawing / Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
13-365-19	2	Display Trip Amplifier type ABBD2 Connection System Diagram	01	2015-08-04
120-525-19	1	I.S. SILBUS 4 Channel Indicator Output Transceiver type SILBUS-BLIP2 Connection System Diagram	01	2016-02-19
120-665-19	2	SILBUS Modbus to SILBUS Bridge Type SILBUS-MB1 Connection System Diagram	01	2016-03-16
120-191-19	1	SILBUS 4 Channel Analogue Transmitter Type SILBUS-TX4A Connection System Diagram	06	2016-01-05
120-624-19	1	SILBUS Universal Bridge Type SILBUS-SUB1 Connection System Diagram	01	2018-08-14

Note: An "*" is added before the tittle of documents that are new or revised.

Refer to Test Report AU/TSA/ExTR18.0025/02 (37607) for the full list of drawings and they apply to this certificate.

Specific Conditions of use pertaining to Issue 16 of this Certificate:

1. It is a condition of manufacture that each infallible transformer shall be subjected to the tests of Clause 11.2 of IEC 60079.11 Standard for Routine Tests.

2. It is a condition of manufacture that the routine High Voltage Test of Clause 11.2 of IEC 60079.11 be applied at 500 V r.m.s. between the intrinsically safe output conductors and earth.

3. It is a condition of safe use that the Controller 8081 has been assessed as an associated equipment under the 'entity' concept. The following parameters must be taken into account during installation:

	CONNECTOR K8		
INPUT PARAMETERS	**(i) 115 Vac or 240 Vac Mains Supply**		**(ii) 24 V ac Power Supply**
Maximum Supply Voltage *Um*	132.5 V r.m.s.	265 V r.m.s.	132 V r.m.s.
Nominal Supply Voltage *Un*	N/A	N/A	24 V (2 x 12 V)

4. It is a condition of safe use that the Dupline 128 has been assessed as an intrinsically safe system and the following cable parameters must be taken into account during installation:

   Between the sources of power and the channel generator DEX 3490 0000 712:

C_{cable}	< 1 μF
L/R_{cable}	< 84 μH/Ω

   Between the sources of power and the zener limiter AEL1:

C_{cable}	< 1 μF
L/R_{cable}	< 54 μH/Ω

   Total cable parameters after the zener limiter AEL1 or Belt Controller 8081 or Repeater A2WCCT1 supplying the complete Dupline 128 load:

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

Ccable	< 1 µF
L/Rcable	< 54 µH/Ω

5. It is a condition of safe use that either the cable for the Dupline 128 shall be a dedicated single cable, or shall have its cores separated by an earthed shield from all other circuits.

6. The following input output parameters for Dual Port Channel Generator type GSW1-AC must be taken into account during installation:

Power Supply input Terminals 36 and 37:
Um = 250 VAC

RS485 Communication Port Terminals 49, 50, 51:
Um = 250 VAC

Relay Contacts, Terminal 53, 54, 55:
Relay Contacts, Terminal 56, 57, 58:
Relay Contacts, Terminal 59, 60, 61:
Relay Contacts, Terminal 62, 63, 64:
Um = 250 VAC

Output Terminals 65, 70:
Um = 250 VAC

Digital Input Terminals 66, 67 and 68, 69:
Um = 250VAC

SILBUS Port 1 and SILBUS Port 2:
Uo = 10.51 V
Ui = 12.6 V
Ci = 0 µF
Li = 0 µH
Io (thermal) = 0.213 A
Io (spark) = Current will depend on the values of R171 and R271 resistors. Refer the table below:

Output Parameters of SILBUS Port 1 and Port 2				
R171/ R271, Ω	Io (spark) Amps	Lo/Ro Ratio µH/Ω Group I	Output Inductance Lo, µH Group I	Output Capacitance Co, µF Group I
0	4.26	42	13	31.5
1	3.05	58	25	
1.5	2.67	66	33	
1.8	2.49	71	38	
2.2	2.28	78	45	
2.7	2.06	86	55	
3.3	1.85	96	68	
4.7	1.49	119	104	

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

7. The following input output parameters pertaining to Dual Port Channel Generator type GSW1-DC must be taken into account during installation**:**

The power supply input terminals (36, 37):
Uo = 0 V
Ui = 12.6 V
Ii = 3.3 A
Ci = 0 nF
Li = 0 µH

RS 485 Communication Port terminals (49, 50, 51):
Ui = 12.6 V
Ii = 3.3 A
Ci = 0 nF
Li = 0 µH
Uo = 5.88 V
Io = 9.0 mA
Co = 14µF
Lo = 1 mH

Relay contacts terminals (53, 54, 55), (56, 57, 58), (59, 60, 61), (62, 63, 64):
Ui = 12.6 V
Ii = 3.3 A
Ci = 2.2 nF
Li = 0 µH

Field Supply terminals (65, 70):
Ui = 0 V
Uo = 12.6 V
Io = 40 mA
Lo = 1 mH
Co = 14 µF
Lo/Ro = 1 mH/Ω

Input-1 (66, 67) and Input-2 (68, 69):
Ui = 12.6 V
Ii = 3.3A
Ci = 0 nF
Li = 0 mH

SILBUS Port 1 (1, 2) and SILBUS Port 2 (34, 35):
Uo = 10.51 V
Ui = 12.6 V
Ci = 0 µF
Li = 0 µH
Io (thermal) = 0.213 A
Io (spark) = Current will depend on the values of R171 and R271 resistors. Refer the table below:

Output Parameters of SILBUS Port 1 and Port 2				
R171 / R271 Ω,	Io (spark) Amps	Lo/Ro Ratio µH/Ω	Output Inductance Lo, µH	Output Capacitance Co, µF
		Group I	Group I	Group I
0	4.26	42	13	31.5
1	3.05	58	25	
1.5	2.67	66	33	
1.8	2.49	71	38	
2.2	2.28	78	45	
2.7	2.06	86	55	
3.3	1.85	96	68	
4.7	1.49	119	104	

8. For Hand Held Programmer Type HHP1-S, the following conditions apply:

1. The batteries can only be removed or replaced in the non-hazardous area.
2. The Hand Held programmer shall be used with the protection leather case.
3. Only the following primary batteries shall be used with the HHP1-S
   - VARTA LONGLIFE ALKALINE LR6 Type 4106
   - VARTA HIGH ENERGY ALKALINE LR6 Type 4906
   - PROCELL ALKALINE LR6 Type PC1500
   - DURACELL COPPERTOP ALKALINE LR6 Type MN1500
4. The micro SD card must only be removed or installed in the non-hazardous area.

9. For SILBUS-SUB1, the following conditions apply:

1. The equipment must be installed in a host enclosure which provides a minimum of IP54 ingress protection and suitable for Group I.
2. Um = 265 V only be used in safe area.

10. For SILBUS TX2F-RX2A, the following condition apply:

1. The equipment must be installed in a host enclosure which provides a minimum of IP54 ingress protection and suitable for Group I.

Details of certificate changes for issue 1 to 15

Details of certificate changes for issue 1:
Safety Transmitter type SILBUS8150 and Tail End Unit type TEU2, which were assessed and tested respectively in TestSafe test reports 27056 and 28760, are added to the system.

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960

Certificate issued by:

- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 – 4 units
- 4 channel Analog Transmitter ATX4A – 32 units
- 8 channel Digital Transmitter 8084 – 128 units
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – 14 units
- Digital Receiver ARX4D – 16 units
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – 112 units
- Temperature Transmitter Type G3210 1112 – 112 units
- Digital Transmitter 8023 – 128 units
- Safety Transmitter type SILBUS8150 (assessed in test report 27056) – up to 63 units
- Tail End Unit type TEU2 (assessed in test report 28760) – 1 unit

Details of certificate changes for issue 2:
Single Channel Digital Transmitter Type SILBUS 8161 and Eight Channel Digital Transmitter Type SILBUS 8163 are now to be added to the system. These are assessed for compliance in IECEx test reports AU/TSA/ExTR08.0002/00 and AU/TSA/ExTR08.0003/00. The revised system has been assessed in AU/TSA/ExTR 08.0009/00.

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 – 4 units
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below)
- Tail End Unit type TEU2 – 1 unit
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below)
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below)

* Note: Any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels is allowable.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

Details of certificate changes for issue 3:
Optional use of Dual Port Channel Generator type GSW1-AC and Dual Port Channel Generator type GSW1-DC in the Contact Monitoring System Type Dupline 128. They are assessed in test reports AU/TSA/ExTR08.0021 and AU/TSA/ExTR08.0020.

Details of certificate changes for issue 4:
Dual Port Channel Generator type GSW1-AC and Dual Port Channel Generator type GSW1-DC are now to be added to the system. These are assessed for compliance in IECEx test reports AU/TSA/ExTR 08.0021/00 and AU/TSA/ExTR 08.0020/00. The system has been assessed in AU/TSA/ExTR 08.0064/00.

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 – 4 units
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below)
- Tail End Unit type TEU2 – 1 unit
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below)
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below)
- Dual Port Channel Generator type GSW1-AC – ** (see note below)
- Dual Port Channel Generator type GSW1-DC – ** (see note below)

* Note: Any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels is allowable.

** Note: The Dual Ported Channel Generator Type GSW1-xx has a maximum database of 128 channels for both ports combined. Using one channel on one port uses the same channel on the other port.

Details of certificate changes for issue 5:
The following modules are now to be added to the system:

- Four channel analogue transmitter type SILBUS-TX4A (see report 31699 – AU/TSA/ExTR 09.0049/00)
- Four channel analogue receiver type SILBUS-RX4A (see report 31726 – AU/TSA/ExTR 09.0050/00)
- Four channel digital transmitter type SILBUS-TX4D (see report 31730 – AU/TSA/ExTR 09.0048/00)

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

- Four channel digital receiver type SILBUS-RX4D (see report 31734 – AU/TSA/ExTR 09.0051/00)

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 – 4 units
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below) and SILBUS – 63 max.
- Tail End Unit type TEU2 – 1 unit (+ SILBUS – 2 Units)
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below) and SILBUS – 128 max.
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below) and SILBUS – 128 max.
- Dual Port Channel Generator type GSW1-AC – ** (see note below)
- Dual Port Channel Generator type GSW1-DC – ** (see note below)
- Four channel analogue transmitter type SILBUS-TX4A – 32 units max.
- Four channel analogue receiver type SILBUS-RX4A – 32 units max.
- Four channel digital transmitter type SILBUS-TX4D – 32 units max.
- Four channel digital receiver type SILBUS-RX4D – 32 units max.

* Note: The Dupline bus allows any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels is allowable.

** Note: The item GSW1-AC/DC provide a new bus output called “SILBUS”. This is described in drawings 120-002-19 and 120-003-19. This connects to the original bus using zener limiter AEL1 shown in 120-003-19.

Details of certificate changes for issue 6:

1. Single Channel Digital Transmitter Type SILBUS8161 inserted a reset chip IC3 to the pin 7 of IC2 in Drawing 120-101-03. This was assessed in Test Report AU/TSA/ExTR10.0041/00 (TR32507).

2. Eight Channel Digital Transmitter Type SILBUS8163 inserted a reset chip IC3 to the pin 7 of IC1 in Drawing 120-121-03. This was assessed in Test Report AU/TSA/ExTR10.0042/00 (TR32508).

3. The following modules are now to be added to the system:

- Termination Unit Type SILBUS-OAS1 (see report 32412 – AU/TSA/ExTR 10.0030/00)
- Repeater Type SILBUS-A2WCCT2 (see report 32413 – AU/TSA/ExTR 10.0031/00)

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

- Network Bridge Type SILBUS-SNB1 (see report 32414 – AU/TSA/ExTR 10.0032/00)

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 and Repeater SILBUS-A2WCCT2 mixed – max 4 units; or
  Repeater Type SILBUS-A2WCCT2 – 8 units for a single channel generator on same SILBUS network (maximum 32 networks in series).
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below) and SILBUS – 63 max.
- Tail End Unit type TEU2 – 1 unit (+ SILBUS – 2 Units)
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below) and SILBUS – 128 max.
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below) and SILBUS – 128 max.
- Dual Port Channel Generator type GSW1-AC – ** (see note below)
- Dual Port Channel Generator type GSW1-DC – ** (see note below)
- Four channel analogue transmitter type SILBUS-TX4A – 32 units max.
- Four channel analogue receiver type SILBUS-RX4A – 32 units max.
- Four channel digital transmitter type SILBUS-TX4D – 32 units max.
- Four channel digital receiver type SILBUS-RX4D – 32 units max.
- Termination Unit Type SILBUS-OAS1-BEG – 4 units.
- Termination Unit Type SILBUS-OAS1-END – 4 units.
- Network Bridge Type SILBUS-SNB1 – 16 units max.

* Note: The Dupline bus allows any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels is allowable.

** Note: The item GSW1-AC/DC provides a new bus output called “SILBUS”. This is described in drawings 120-002-19 and 120-003-19. This connects to the original bus using zener limiter AEL1 shown in 120-003-19.

Details of certificate changes for issue 7:
The following modules are now to be added to the system:

1. Single Channel Temperature Transmitter type SILBUS-TX1T, assessed in TestSafe test report 32862, AU/TSA/ExTR11.0021/00. Maximum of 112 modules can be connected to the system.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

2. Dual Channel Requency Transmitter type SILBUS-TX2F, assessed in TestSafe test report 32863, AU/TSA/ExTR11.0022/00. Maximum of 112 modules can be connected to the system.

The system has been assessed in test report 33047, AU/TSA/ExTR11.0031/00.

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 and Repeater SILBUS-A2WCCT2 mixed – max 4 units; or Repeater Type SILBUS-A2WCCT2 – 8 units for a single channel generator on same SILBUS network (maximum 32 networks in series).
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below) and SILBUS – 63 max.
- Tail End Unit type TEU2 – 1 unit (+ SILBUS – 2 Units)
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below) and SILBUS – 128 max.
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below) and SILBUS – 128 max.
- Dual Port Channel Generator type GSW1-AC – ** (see note below)
- Dual Port Channel Generator type GSW1-DC – ** (see note below)
- Four channel analogue transmitter type SILBUS-TX4A – 32 units max.
- Four channel analogue receiver type SILBUS-RX4A – 32 units max.
- Four channel digital transmitter type SILBUS-TX4D – 32 units max.
- Four channel digital receiver type SILBUS-RX4D – 32 units max.
- Termination Unit Type SILBUS-OAS1-BEG – 4 units.
- Termination Unit Type SILBUS-OAS1-END – 4 units.
- Network Bridge Type SILBUS-SNB1 – 16 units max.
- Single Channel Temperature Transmitter Type SILBUS-TX1T– * (see note below)
- Dual Channel Frequency Transmitter Type SILBUS-TX2F– * (see note below)

* Note: The Dupline bus allows any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels.

** Note: The item GSW1-AC/DC provides a new bus output called “SILBUS”. This is described in drawings 120-002-19 and 120-003-19. This connects to the original bus using zener limiter AEL1 shown in 120-003-19.

Details of certificate changes for issue 8:

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

The following modules are now to be added to the system:

- SILBUS Network Monitor Type SILBUS-SNM1-EOL and SILBUS-SNM1-ELD, assessed in TestSafe test report 33693 (AU/TSA/ExTR 12.0031/00)

The system has been assessed in test report 33694, AU/TSA/ExTR12.0032/00.

The updated list of system modules is:

- Separately certified power supplies that provide intrinsically safe output according to the notes given in drawing 76-001-19
- Belt Controller 8081
- Separately certified Barrier Z960
- Channel Generator DEX 3490 0000 712 – 1 unit
- Programmer GAP 1605 – 1 unit
- Zener Limiter AEL1 – 1 unit
- Repeater A2WCCT1 and Repeater SILBUS-A2WCCT2 mixed – max 4 units; or
  Repeater Type SILBUS-A2WCCT2 – 8 units for a single channel generator on same SILBUS network (maximum 32 networks in series).
- 4 channel Analog Transmitter ATX4A – * (see note below)
- 8 channel Digital Transmitter 8084 – * (see note below)
- R1+D1 termination unit or DT01 termination unit – 8 units
- Analog Receiver ARX8A – * (see note below)
- Digital Receiver ARX4D – * (see note below)
- Test Unit GTU8 – 2 units
- Analog Transmitter Type G3210 1161 – * (see note below)
- Temperature Transmitter Type G3210 1112 – * (see note below)
- Digital Transmitter 8023 – * (see note below)
- Safety Transmitter type SILBUS8150 – * (see note below) and SILBUS – 63 max.
- Tail End Unit type TEU2 – 1 unit (+ SILBUS – 2 Units)
- Single Channel Digital Transmitter Type SILBUS 8161 – * (see note below) and SILBUS – 128 max.
- Eight Channel Digital Transmitter Type SILBUS 8163 – * (see note below) and SILBUS – 128 max.
- Dual Port Channel Generator type GSW1-AC – ** (see note below)
- Dual Port Channel Generator type GSW1-DC – ** (see note below)
- Four channel analogue transmitter type SILBUS-TX4A – 32 units max.
- Four channel analogue receiver type SILBUS-RX4A – 32 units max.
- Four channel digital transmitter type SILBUS-TX4D – 32 units max.
- Four channel digital receiver type SILBUS-RX4D – 32 units max.
- Termination Unit Type SILBUS-OAS1-BEG – 4 units.
- Termination Unit Type SILBUS-OAS1-END – 4 units.
- Network Bridge Type SILBUS-SNB1 – 16 units max.
- Single Channel Temperature Transmitter Type SILBUS-TX1T– * (see note below)
- Dual Channel Frequency Transmitter Type SILBUS-TX2F– * (see note below)
- Network Monitor Type SILBUS-SNM1-EOL – 2 units
- Network Monitor Type SILBUS-SNM1-ELD – 2 units

* Note: The Dupline bus allows any combination of Digital Transmitters up to a maximum of 128 channels, or any combination of Digital and Analog Transmitters up to a maximum of 112 channels.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

** Note: The item GSW1-AC/DC provides a new bus output called “SILBUS”. This is described in drawings 120-002-19 and 120-003-19. This connects to the original bus using zener limiter AEL1 shown in 120-003-19.

Details of certificate changes for issue 9:

Dongguan Hubbell Electrical Products Company Limited is added as a new manufacturing site.

Details of certificate changes for issue 10:
The following modules are now to be added to the system:
- The Uninterruptible Power Supply 12/NMH/288 (see Certificate – IECEx TSA 13.0017X)
- Intrinsically Safe CM Filter type CMF1 (see Report AU/TSA/ExTR14.0002/00)
- SILBUS Series Resistor type SR1 (see Report AU/TSA/ExTR14.0002/00)
- Display Trip Amplifier type ABBD2 (see Certificate – IECEx MSC 14.0020X)

The system has been assessed in test report 34444, AU/TSA/ExTR13.0045/00.

Details of certificate changes for issue 11:

The following modules are now to be added to the system:

- Intrinsically Safe 4 Channel Indicator Output Transceiver Type SILBUS-BLIP2 and Intrinsically Safe Multi-colour Indicator Type IND2 (see Report AU/TSA/ExTR16.0001/00)
- SILBUS Modbus Bridge Type SILBUS-MB1 (see Report AU/TSA/ExTR16.0007/00)

The following modules are modified in the system:

- Single Transmitter Type SILBUS-TX1T (see Report AU/TSA/ExTR11.0021/01)
- 4 Channel Analogue Transmitter Type SILBUS-TX4A (see Report AU/TSA/ExTR16.0008/00)

The system has been assessed in test report 35509, AU/TSA/ExTR16.0010/00.

Details of certificate changes for issue 12:
- Change of both Applicant address and Manufacturer address from

  “1 / 4 Packard Avenue, Castle Hill, NSW 2154, Australia”

  To

  “Unit 1, 42 Carrington Road, Castle Hill, NSW 2154, Australia”

Details of certificate changes for issue 13:
The following device is now to be added to the system:

- Hand Held Programmer Type HHP1-S, assessed in TestSafe test report 36092. (AU/TSA/ExTR17.0014/00)

Refer Instruction manual 120-769-12 for specific conditions of use for the Hand Held Programmer Type HHP1-S.

The system has been assessed in test report 36244, AU/TSA/ExTR18.0005/00.

Details of certificate changes for issue 14:

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia

The following device is now to be added to the system:

- SILBUS Universal Bridge type SUB1, assessed in TestSafe test report 36343. (AU/TSA/ExTR18.0014/00) which includes the list of drawing for this device.

The SILBUS-SUB1 has following parameters:

SILBUS Input (TB1, TB2)		Power Input (TB3, TB4)	
Input voltage U_i	16.5 V	Input voltage U_i	16.5 V
Input current I_i	3.3 A	Input current I_i	3.3 A
Internal capacitance C_i	0 µF	Internal capacitance C_i	0 µF
Internal inductance L_i	0 mH	Internal inductance L_i	0 mH
Output voltage U_o	0 V	Output voltage U_o	0 V
Output current I_o	0 A	Output current I_o	0 A
MODBUS Input (TB16 – TB18)		Ethernet port (X101)	
Maximum voltage U_m	265 V	Maximum voltage U_m	265 V
Input voltage U_i	16.5 V	Input voltage U_i	16.5 V
Input current I_i	3.3 A	Input current I_i	3.3 A
Internal capacitance C_i	0 µF	Input power P_i	1 W
Internal inductance L_i	0.75 mH	Internal capacitance C_i	0.242 µF
Output voltage U_o	6.88 V	Internal inductance L_i	0 mH
Output current I_o	100 mA	Output voltage U_o	6.88 V
External capacitance C_o	10 µF	Output current I_o	511 mA
External inductance/resistance ratio L_o/R_o	2.3 mH/Ω	External capacitance C_o	60 µF
Console port (X60)		External inductance L_o	1.5 mH
Input voltage U_i	5.88 V		
Input current I_i	3.3 A		
Output voltage U_o	5.88 V		
Output current I_o	185 mA		
External capacitance C_o	10 µF		
External inductance L_o	13 mH		

The SILBUS-SUB1 requires a host enclosure providing ingress protection to minimum IP54.

Refer Instruction manual 120-621-12 for specific conditions of use for the SILBUS Universal Bridge type SUB1.

The system has been assessed in test report 36438, AU/TSA/ExTR18.0025/00.

Details of certificate changes for issue 15:
Added SILBUS 4 Channel Transceiver type SILBUS TX2F-RX2A (see Test Report 36729 - AU/TSA/ExTR19.0014/00).

The system has been assessed in test report 36730, AU/TSA/ExTR18.0025/01.

Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753 Australia