IKAV05 KEYPAD PUSH BUTTON SYSTEM
User Manual

Issue: R3 Nov 2010

CRN: 8282

Ampcontrol User Manual Part No: 139967

Designed and Manufactured in Australia by Ampcontrol CSM Pty Limited.

Safety and other Warnings

WARNING! 	This safety alert symbol identifies important safety messages in this manual and indicates a potential risk of injury or even death to the personnel. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

CAUTION! 	This safety alert symbol identifies important information to be read in order to ensure the correct sequence of work and to avoid damage or even destruction of the equipment, and reduce any potential risk of injury or death to the personnel.

	Supplementary information not directly affecting safety or damage to equipment. Carefully read the message that follows, and inform other relevant personnel.

	Information concerning possible impact on the environment and actions required for prevention and proper response.

If this document is being read via a computer the hyper links may be used (Press control and click on the blue highlighted text to go to that topic).

Copyright Notice

Disclaimer

Ampcontrol CSM Pty Ltd will make no warranties as to the contents of this documentation and specifically disclaims any implied warranties or fitness for any particular purpose.

Ampcontrol further reserves the right to alter the specification of the system and/or manual without obligation to notify any person or organisation of these changes.

Before You Begin

We would like to take a moment to thank you for purchasing the IKAV05 Keypad Push Button System.

WARNING! 	To ensure the correct and safe operation of this equipment the user is to become completely familiar with the safety requirements and correct operating procedures detailed in this user manual.

Ampcontrol Electronics Contact details:

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Table of Contents:

1 Receiving and Storage

1.1 Receiving

All possible precautions are taken to protect the equipment against damage or losses during shipment, however before accepting delivery, check all items against the packing list or Bill of Lading. If there are shortages or evidence of physical damage, notify Ampcontrol immediately.

Notify Ampcontrol within 7 days (maximum) in case of shortages or discrepancies, according to the packing list. This action will help ensure a speedy resolution to any perceived problems. Keep a record of all claims and correspondence. Photographs are recommended.

Where practicable do not remove protective covers prior to installation unless there are indications of damage. Boxes opened for inspection and inventory should be carefully repacked to ensure protection of the contents or else the parts should be packaged and stored in a safe place. Examine all packing boxes, wrappings and covers for items attached to them, especially if the wrappings are to be discarded.

1.2 Storage after Delivery

Where equipment is not to be installed immediately, proper storage is important to ensure protection of equipment and validity of warranty.

All equipment should be stored indoors protected from the elements in a cool dry area. If storing on the ground, ensure that the storage area is not an area where water will collect.

1.3 Unpacking of Equipment

The method of packing used will depend on the size and quantity of the equipment. The following cautions should be interpreted as appropriate.

CAUTION! 	Take care when unpacking crates as the contents may have shifted during transport. Make sure that cable drums are securely attached to their shipping pallets before attempting to move them (if applicable).

	The disposal of packaging materials, replaced parts, or components must comply with environmental restrictions without polluting the soil, air or water. Ensure that any timber and cardboard used as packaging is disposed of in a safe and environmentally responsible manner. Where possible, dispose of all waste products i.e. oils, metals, plastic and rubber products by using an approved recycling service centre.

2 General Safety

2.1 Personnel Safety Warnings

2.1.1 Relevant Personnel

Ensure all personnel directly responsible or involved with the installation, operation and maintenance of the equipment reference this manual in conjunction with any relevant risk assessments to identify all foreseeable hazards.

2.1.2 Safety Communication

All safety instructions and design requirements within this manual must be communicated to all users. These requirements are necessary to identify and control any foreseeable risk associated with this piece of equipment. In the event of any damage or malfunction that results in the potential to harm the health or safety of any person; the owner/operator should notify the manufacturer immediately.

2.2 Safe Use of Equipment

Equipment supplied has been manufactured within the guide lines of the relevant Australian Standards and state legislative requirements. Equipment identified within this manual has been designed for a specific intended purpose; therefore any modification or damage must be reported to the manufacturer for repair.

The instructions within this manual must be observed as an aid towards achieving maximum safety during operation.

2.2.1 Changes to Equipment

Changes in the design and modifications to the equipment are not permitted

2.2.2 Equipment Knowledge

Experience with, or understanding of, this equipment is essential for the safe installation and removal of the equipment. If in doubt, contact Ampcontrol immediately.

Mechanical and or Electrical installation, and maintenance of plant and equipment, must only be carried out by appropriately trained, qualified and competent personnel.

2.3 Conditions of Conformity – ANZEx [Ex ia]

WARNING! 	To comply with the Conditions of Certification, ensure full serviceable life of the product, and avoid nullifying the warranty, it is essential to exercise great care with the installation, use and storage of the System components. Failure to comply with the Conditions of Certification (Appendix B – Approvals) may seriously compromise the integrity of the system and/or its components, and the consequence can be fatal. The user must ensure that the "Conditions of Safe Use" outlined in the certificate are met or the certificate will not be valid.

3 Overview of the IKAV05 Keypad System

The Ampcontrol IKAV05 Keypad Push Button System is used in conjunction with the Ampcontrol range of Integrated Protection Relays. The Keypad is approved to Ex ia Intrinsic Safety Standards so that it can be installed outside the flameproof enclosure.

The use of the IS Keypad System eliminates the conventional flameproof buttons normally used on a Distribution Control Box (DCB).

A faulty keypad can be changed out at the face, whereas a damaged flameproof actuator requires the DCB to be removed from service for repairs.

CAUTION! 	The user is responsible for assisting in the maintenance of the Ex ia Intrinsic Safety rating by complying with the "Conditions of safe use" outlined in the certificate (Appendix B – Approvals).

The keypad module consist of eight (8) push button keys, each fitted with acknowledge LEDs and associated electronics.

The keypad module is connected to the IKAV05 Interface Module by a three-wire cable. The keypad module receives power and communicates with the IKAV05 Interface via this cable. The setting of DIP Switches 2 and 3 will configure the Interface Module for Standard Operation (See Mode 1 in Section 5) or PLC Control (See Mode 2 in Section 6).

When a keypad key is operated the corresponding relay or opto-isolated output in the IKAV05 Interface Module responds and activates its output.

A typical basic system is shown in Drawing IKAB001 in Appendix A – Drawings.

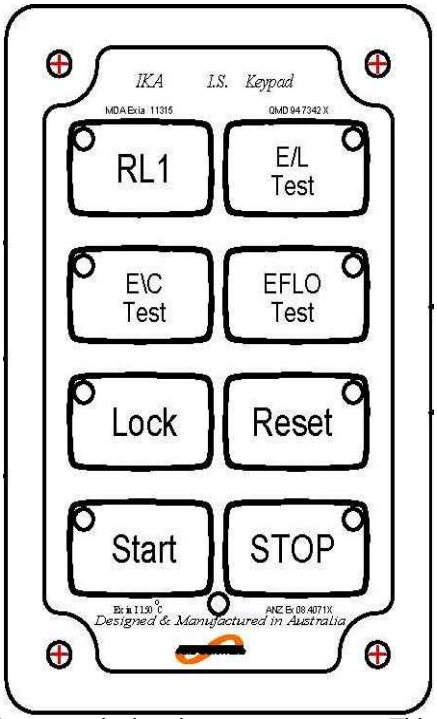
4 Initial Power-up

When power is applied to the IKAV05 Interface Module, the outputs remain off until communications with the keypad is healthy and the Stop key has been pressed (only applies when Mode 1 is selected).

When power is first applied to the keypad (via the IKAV05 Interface) all LEDs on the push button keys will flash simultaneously until communication is established. This flashing may continue if wiring to the keypad is faulty or the Interface Module itself is faulty.

5 Mode 1: Standard Operation

To set the Interface for Standard operation set DIP Switch 2 OFF and Dip Switch 3 ON. The switches are located on the IKAV05 Interface Module, see Drawing IKAM002 in Appendix A – Drawings.



5.1 Stop

Activation of the Stop key causes the Stop opto-isolated output to turn on. This output is connected to the stop input (terminals 19 and 20) on the Integrated Protection Relay.

The Stop key also activates the stop relay output. The relay output is a normally open contact on an internal relay and is normally directly connected in the main control circuit. The contact closes when the keypad and interface are powered up. The contact will open if the Stop key is pressed.

To ensure the Stop key is functioning correctly, a special test function has been attached to this key. When power is first applied to the system the stop LED on the IS Keypad flashes continuously. The Stop outputs on the IKAV05 Interface Module are held in an off state. This condition (indicated by the flashing stop LED) will remain until the Stop key is pressed.

Once the Stop key is pressed, the Keypad and Interface Module go into the normal operating mode.

To add further safety to the Keypad / Interface system, a "watchdog timer", continually tries to open the stop relay output contact. If the keypad system is functioning correctly, the timer is being continually reset and the output remains closed.

CAUTION! 	To enable the additional safety feature of the "watchdog timer" to be fully utilised it is important that the stop relay output contact be used in the control circuit.

5.2 Start

When the Start key is pressed the Start opto-isolated output turns on. This output is connected to the start input (terminals 25 and 26) on the Integrated Protection Relay. This function is ignored unless the stop key has been operated following power up.

5.3 Lock

Before the Lock key is operative the I.S. Digital Input must be closed to allow the lock key to function. The I.S. Digital Input (located on the rear of the Keypad Module) is intended to be connected to a push button which is either locked or behind a lockable cover, to prevent unauthorised operation.

Operation of the Lock key causes the lock opto-isolated output to turn on. This output is connected to the lock input (terminals 21 and 22) on the Integrated Protection Relay.

5.4 Reset

Operation of the Reset key causes the reset opto-isolated output to turn on. This output is connected to the reset input (terminals 23 and 24) on the Integrated Protection Relay.

5.5 Earth Continuity (E/C) Test

Operation of the E/C Test key triggers the test operation contacts, which are connected into the pilot circuit.

The test alternates between an open circuit and a short circuit on the pilot line. The alternations occur every 2 seconds. This can be observed by viewing the Earth Fault Information Pages on the Remote Display Unit of the Integrated Protection Relay.

If the Stop key is pressed simultaneously with the E/C Test key, a diode is switched between the pilot and earth to perform a "Relay Healthy" test. This allows the operator to determine if the fault is in the DCB or in the external circuit.

When this test is performed the Stop relay remains off for 1.5 seconds after the E/C Test key is released.

5.6 Earth Fault Lockout (EFLO) Test

Operation of the EFLO Test key allows external test resistors to be switched between VcmA, VcmB, and VcmC terminals (3, 4 and 5 on the Integrated Protection Relay) and earth.

To perform this test the Start key must be operated while holding the EFLO Test key operated.

5.7 Earth Leakage (E/L) Test

This test is to be performed with the outlet of the equipment energised to test the integrity of the trip circuitry.

Operation of the E/L Test key operates the internal E/L Test relay, which closes the output contact. The relay is intended to be used to apply a test current through the earth leakage toroid. One side of the E/L Test relay output is connected to the 110 Volt AC supply. This can be used as the injection source or can be used to operate an auxiliary relay.

The relay contact closes for 150 ms or 600 ms, depending on the setting of DIP switch 4. This switch is located on the IKAV05 Interface Module. See Drawing IKAM002 in Appendix A – Drawings.

5.7.1 Switch 4 Settings:

Off = 150 ms

On = 600 ms

The 150 ms selection should be used for testing earth leakage relays that provide primary protection.

5.8 RL1

Operation of the RL1 key operates the internal RL1 relay, which closes the output contact.

6 Mode 2: PLC Control

To set the Interface for PLC Control set DIP Switch 2 ON and Dip Switch 3 OFF. The switches are located on the IKAV05 Interface Module. See Drawing IKAM002 in Appendix A – Drawings.

When the IKAV05 Interface Module has been set to Mode 2 the Programmable Logic Controller controls the outlet of the DCB. The main differences to the Standard Operation are as follows:

1. No stop reset is required on power up
2. Operation of the Start key causes RL1 output to close (while key is closed)
3. Operation of RL1 Key has no action
4. Start opto-output is disabled

6.1 Description of Operation

RL1 relay output contact is connected to a PLC Input.

A PLC Output is connected to the start input (terminals 25 and 26) on the Integrated Protection Relay.

Operation of the Start push key operates an internal relay RL1 in the IKAV05 Interface Module. This relay output closes the PLC input.

Depending on the user's PLC code, the PLC may be used to initiate any pre-start procedures, such as the operation of warning alarms etc.

At the successful conclusion of any pre-start routines, the PLC output should be closed which will operate the Integrated Protection Relay that energises the outlet.

All other key operations for Test, Reset, Lock and Stop are as previously described in Section 5, Mode 1: Standard Operation.

7 PLC Control Using Overlayed Keypad

The Overlayed Keypad has the Start Key located in a different location to that of the Standard Keypad. This is achieved by the following:

The normal Start Key has been blanked out (lower left key).

The RL1 key has been relabelled Start (upper left key).

To set the Interface for PLC Control where there is existing Overlayed Keypads Mode 1 must be used. For this mode of operation set DIP Switch 2 OFF and Dip Switch 3 ON. The switches are located on the IKAV05 Interface Module. See Drawing: IKAM002, in Appendix A – Drawings.

7.1 Description of Operation

	Upon power up the Stop key must be operated before operating any other keys. See Section 5.1 "Stop".

When the IKAV05 Interface Module has been set to Mode 1 and connected to an Overlayed Keypad the Programmable Logic Controller controls the outlet of the DCB.

RL1 relay output contact is connected to a PLC Input.

A PLC Output is connected to the start input (terminals 25 and 26) on the Integrated Protection Relay.

Operation of the Start key operates an internal relay RL1 in the IKAV05 Interface Module. This relay output closes the PLC input.

Depending on the user's PLC code, the PLC may be used to initiate any pre-start procedures, such as the operation of warning alarms etc.

At the successful conclusion of any pre-start routines, the PLC output should be closed which will operate the Integrated Protection Relay that energises the outlet.

All other key operations for Test, Reset, Lock and Stop are previously described in Section 5 "Mode 1: Standard Operation".

8 Specifications

Supply Volts:

110 Vac ± 20% 10VA, 50 Hz ± 2 Hz

Relay Contacts:

RL1, E/L Test, Stop:

1 N/O 5A/ 190 VAC 100 VA maximum

9 Settings.

9.1 Operation Mode Settings:

9.1.1 Mode 1 - Standard Operation and PLC Control using Overlayed Keypad

Dip Switch 2 OFF
Dip Switch 3 ON

9.1.2 Mode 2 – PLC Control

Dip Switch 2 ON
Dip Switch 3 OFF

9.2 Earth Leakage Test Time Setting:

Dip Switch 4 ON – 500 ms
Dip Switch 4 OFF – 150 ms

10 Maintenance & Disposal

10.1 Equipment Maintenance

WARNING! 	The Keypad Push Button System has no user serviceable parts. All repairs must be carried out by Ampcontrol personnel only. If a fault develops return the component/s to Ampcontrol for repair. It is essential that no attempt be made to repair the component/s as any attempt to dismantle or repair them can seriously compromise the safety of the system and/or unit, and the consequence can be fatal.

The Keypad Push Button System and its components do not have any customer serviceable parts and are not provided with any user adjustments.

10.2 Disposal of System Parts

	The electronic equipment discussed in this manual must not be treated as general waste. By ensuring that this product is disposed of correctly you will be helping to prevent potentially negative consequences for the environment and human health which could otherwise be caused by incorrect waste handling of this product.

11 Part Numbers

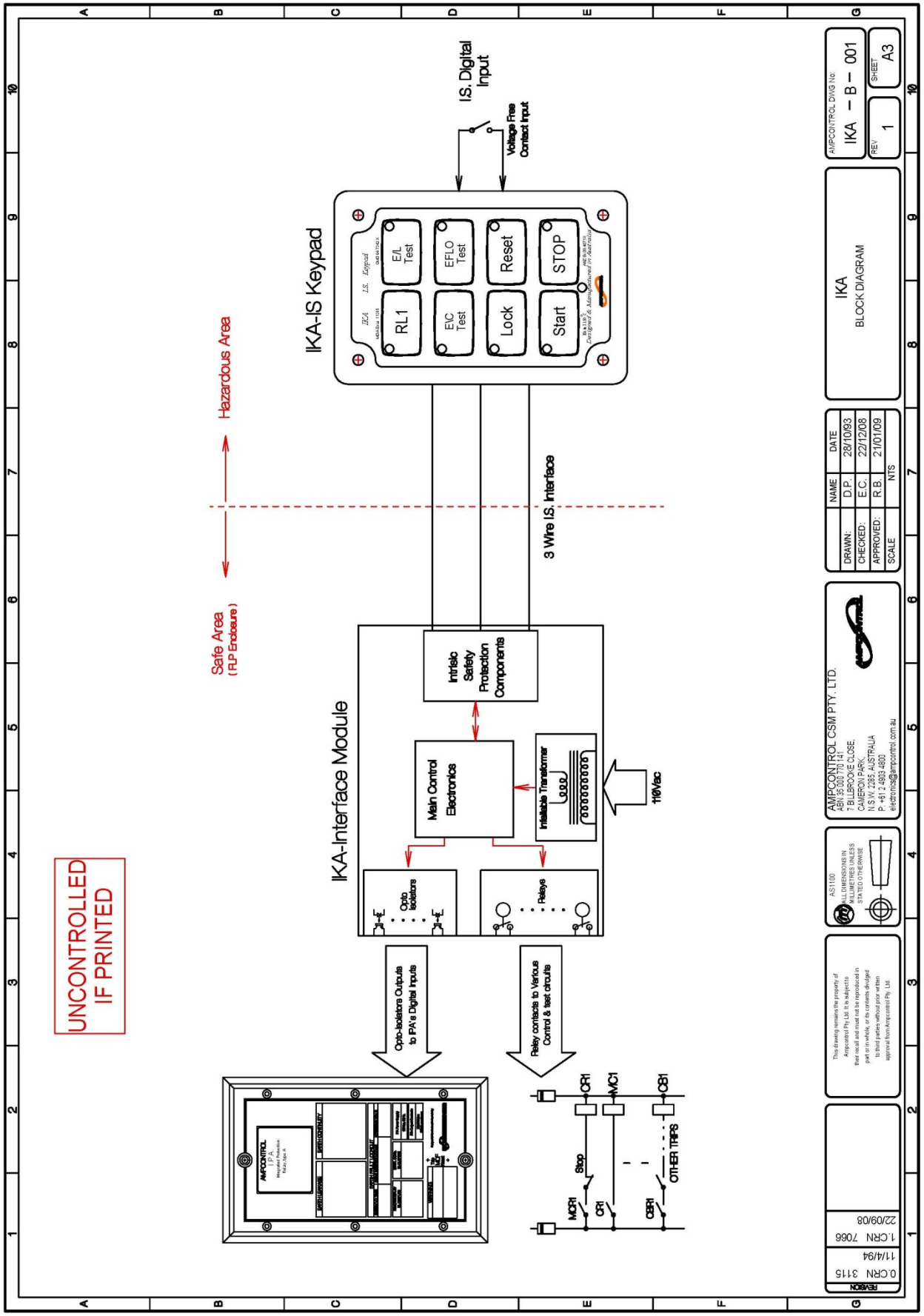
101494	IKAV05 Interface
101398	Standard IS Keypad
118670	Overlayed IS Keypad
117439	Earth Fault Test Module-415 V
101493	Earth Fault Test Module – 1 kV
117440	Earth Fault Test Module - 3.3 kV
139967	IKAV05 User Manual

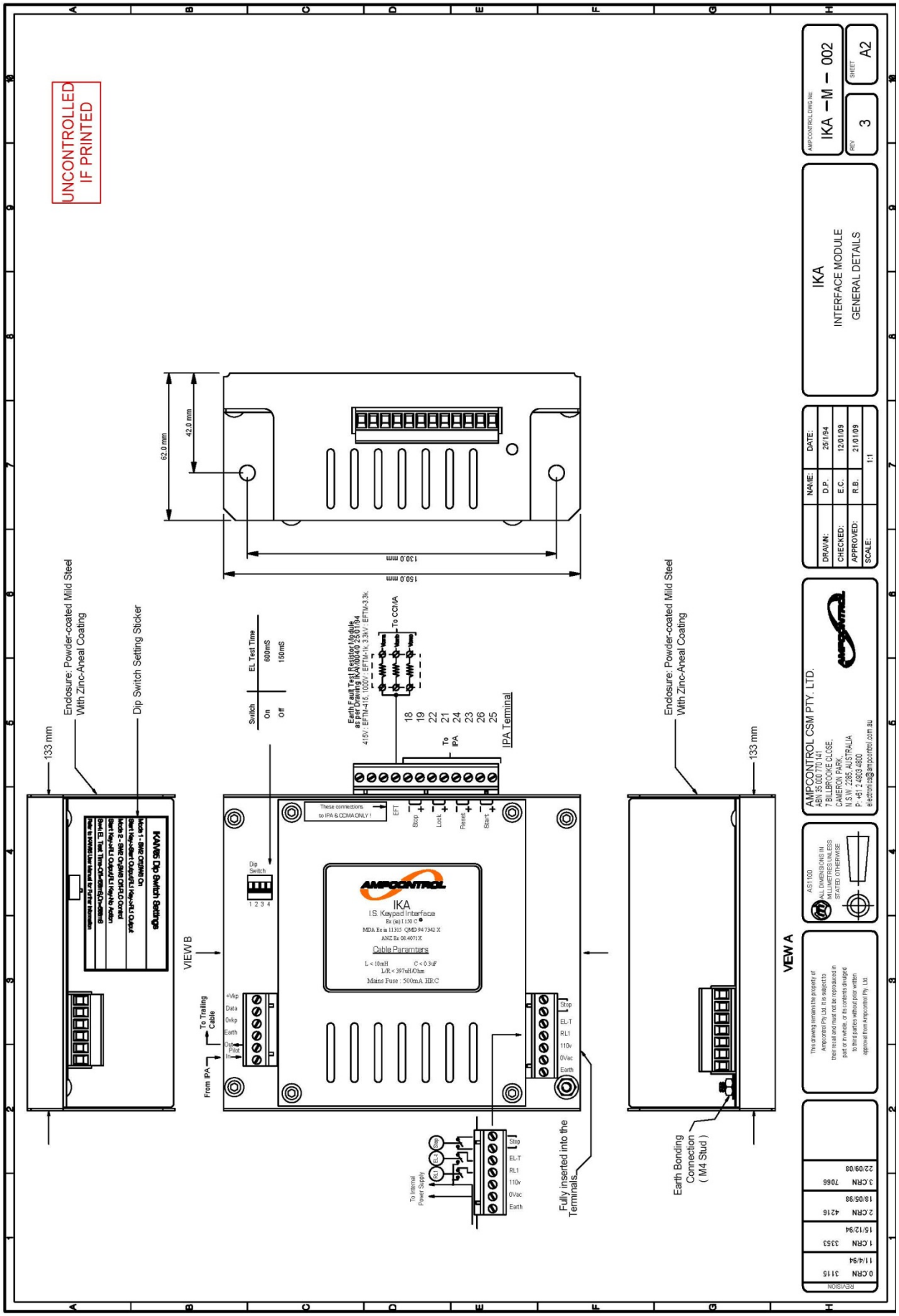
Appendix A – Drawings

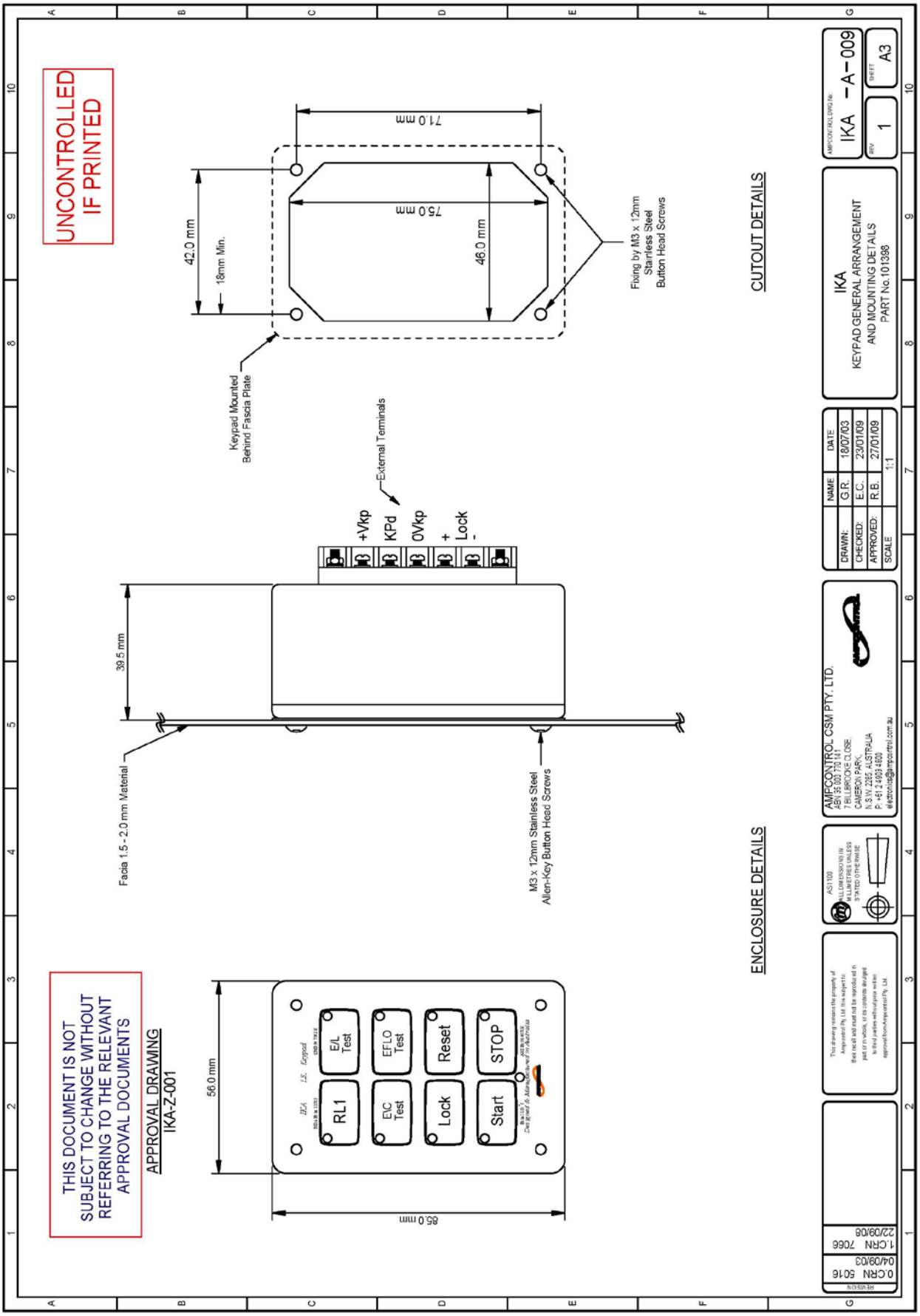
Drawing Number	Description
IKAB001	IKA Block Diagram
IKAM002	Interface Module – General Details
IKAA009	Keypad General Arrangement and Mounting Details

The drawings appear in the following pages in the same order in which they are listed in the table above.

If this document is being read via a computer the hyper links may be used (Press control and click on the drawing number to go to that drawing).


I.S. Digital Input
Voltage Free Contact Input
IKA-IS Keypad
E/L Test
EFLO Test
Reset
STOP
RL1
ENC Test
Lock
Start
Hazardous Area
Safe Area (R.P Enclosure)
3 Wire I.S. Interface
IKA-Interface Module
Intrinsic Safety Protection Components
Main Control Electronics
Intrinsic Transformer
110Vac
Opto Isolators
Relays
Opto-isolators Outputs to PA's Digital Inputs
Relay contacts to Various Control & Isolation circuits
Stop
OTHER TYPES
UNCONTROLLED IF PRINTED
IKA
BLOCK DIAGRAM
AMPCONTROL CSM PTY. LTD.
ABN 95 000 770 141
7 BILLBROOKE CLOSE,
CAMERON PARK,
N.S.W. 2285, AUSTRALIA
P. +61 2 4903 4800
electronics@ampcontrol.com.au
DRAWN: D.P. 29/10/93
CHECKED: E.C. 22/12/08
APPROVED: R.B. 21/01/09
SCALE NTS
AMPCONTROL DWG No. IKA – B – 001
REV 1
SHEET A3
0.CRN 3115 11/4/94
1.CRN 7066 22/09/08


UNCONTROLLED IF PRINTED
IKA
INTERFACE MODULE
GENERAL DETAILS
IKA –M – 002
REV 3
SHEET A2
AMPCONTROL CSM PTY. LTD.
ABN 85 001 771 141
7 BILLBROOKE CLOSE,
CAMERON PARK,
N.S.W. 2285, AUSTRALIA
P: +61 2 4903 4800
electron.ag@ampcontrol.com.au
DRAWN: D.P. 25/1/94
CHECKED: E.C. 12/01/09
APPROVED: R.B. 21/01/09
SCALE: 1:1
62.0 mm
42.0 mm
130.0 mm
150.0 mm
133 mm
Enclosure: Powder-coated Mild Steel With Zinc-Aneal Coating
Dip Switch Setting Sticker
KANE Dip Switch Settings
EL Test Time
Switch
On
Off
600mS
150mS
To CCIA
IPA Terminal
To IPA
18 19 22 21 24 23 26 25
These connections to IPA & CCIA ONLY !
EFT
Stop
Lock
Reset
Start
Dip Switch
1 2 3 4
AMPCONTROL
IKA
I.S. Keypad Interface
Ex (ia) I 150 C
MDA Ex ia 11315 QMD 947342 X
ANZ Ex 08.4071 X
Cable Parameters
L < 10mH C < 0.3uF
L/R < 397uH/Ohm
Mains Fuse : 500mA HRC
VIEW B
To Trailing Cable
From IPA
+Vkp
Data
0vkp
Earth
Pilot
Stop
EL-T
RL1
110v
0Vac
Earth
To Internal Power Supply
Fully inserted into the Terminals
VIEW A
Earth Bonding Connection (M4 Stud)
AS1100
ALL DIMENSIONS IN MILLIMETRES UNLESS STATED OTHERWISE
This drawing remains the property of Ampcontrol Pty Ltd. It is subject to their recall and must not be reproduced in part or in whole, or its contents divulged to third parties without prior written approval from Ampcontrol Pty. Ltd.
REVISION
0.CRN 3115 11/4/94
1.CRN 3353 15/12/94
2.CRN 4216 18/05/98
3.CRN 7066 22/09/08


UNCONTROLLED
IF PRINTED
CUTOUT DETAILS
71.0 mm
75.0 mm
46.0 mm
42.0 mm
18mm Min.
Fixing by M3 x 12mm
Stainless Steel
Button Head Screws
Keypad Mounted
Behind Fascia Plate
External Terminals
+Vkp
KPd
0Vkp
+
Lock
-
39.5 mm
Facia 1.5 - 2.0 mm Material
M3 x 12mm Stainless Steel
Allen-Key Button Head Screws
ENCLOSURE DETAILS
56.0 mm
85.0 mm
E/L Test
EFLO Test
Reset
STOP
RL1
E/C Test
Lock
Start
THIS DOCUMENT IS NOT
SUBJECT TO CHANGE WITHOUT
REFERRING TO THE RELEVANT
APPROVAL DOCUMENTS
APPROVAL DRAWING
IKA-Z-001
DRAWN: G.R. 18/07/03
CHECKED: E.C. 23/01/09
APPROVED: R.B. 27/01/09
SCALE 1:1
IKA
KEYPAD GENERAL ARRANGEMENT
AND MOUNTING DETAILS
PART No.101398
IKA -A-009
SHEET A3
AMPCONTROL CSM PTY. LTD.
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0.CRN 5016
04/09/03
1.CRN 7066
22/09/08

Appendix B – Approvals

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

Certificate Holder:	Ampcontrol CSM Pty Ltd 7 Billbrooke Close Cameron Park NSW 2285 Australia
Electrical Apparatus:	**Integrated Protection Relay Systems – Types A (IPA), B (IPB) and C (IPC) (including equipment as listed in Table 1)**
Type of Protection:	IPA, IPB and IPC including items 1 to 6 and 9 (refer Table 1): Ex (ia) I Items 7 + 8 (refer Table 1): Ex ia I 150C
Marking Code:	(Type of Protection as listed in Table 1) ANZEx 08.4071X
Manufacturing Location(s):	Ampcontrol CSM Pty Ltd 7 Billbrooke Close Cameron Park NSW Australia

ITACS®
ABN 06 098 886 563

Certificate issued by

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JAS-ANZ
Accreditation by the Joint Accreditation System of Australia and New Zealand
Acc No. Z2870404AA
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Page 1 of 9

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

*This certificate is granted subject to the conditions as set out in Standards Australia/Standards New Zealand Miscellaneous Publication **MP87:2004**.*

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:

AS 2380.1:1989 inc Amdt No. 1	Electrical equipment for explosive atmospheres Explosion protection techniques Part 1 : General requirements
AS 2380.7: 1987	Electrical equipment for explosive atmospheres Explosion protection techniques. Part 7: Intrinsic Safety

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standard(s) listed above. Attention is drawn to the fact that the above Standards have been superseded.*

ASSESSMENT & TEST REPORTS:

The equipment listed has successfully met the assessment and test requirements as recorded in:

Test Report No. and Issuing Body:	**Refer to Schedule**
Quality Assessment Report No. and Issuing Body:	**IECEx AU/TSA/QAR06.0007/02**
File Reference:	**ANZEx 08.4071X**

Signed for and on behalf of issuing body

8 March 2009
Date of Issue

Certification Authority
Position

This certificate and schedule shall not be reproduced except in full

This certificate is not transferable and remains the property of the issuing body and must be returned in the event of it being revoked or not renewed.

Page 2 of 9

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

Schedule

EQUIPMENT:

The Integrated Protection Relay Type A (IPA), Integrated Protection Relay Type B (IPB) and Integrated Relay Type C (IPC), with associated equipment as listed in Table 1 below, provide electrical protection functions for electrical power circuits in coal mines.

Table 1. Associated Equipment

ITEM	Module Type	Category
1	Cable Connection Module – CCMA – 3.3KV, 1000V, 415V + 110V	Ex [ia]
2	Optional LED/Relay Module	
3	Serial Interface Module – I.P.S.I	
4	Remote Termination Units – RTU-1 and RTU-2	
5	Communications Interface Unit RTU-CIU1	
6	Keypad Interface IKA	
7	Keypad IKA	Ex ia
8	Remote Display Module – RDM-1	
9	Cable Connection Module – CCMC – 3.3kV, 1.0kV	Ex [ia]

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

TEST REPORTS:

Test Reports applicable to the product and systems covered by this certificate include:

Test Laboratory	Test Report	Equipment
SIMTARS	NI94/0021 NI92/0106 NI93/0005 NI93/0041 I94/0529	Integrated Protection Relay Systems Type A & B
SIMTARS	NI95/0023 NI92/005 I92/018 NI94/0021	Integrated Protection Relay Systems Type A & B
SIMTARS	NI96/0030	Integrated Protection Relay Systems Type A & B
SIMTARS	NI97/0006	Integrated Protection Relay Systems Type A & B
SIMTARS	NI97/0032	Integrated Protection Relay Systems Type A & B
SIMTARS	I98/0012	Integrated Protection Relay Systems Type A & B
SIMTARS	NI01/0001	Integrated Protection Relay Systems Type A,B & C
SIMTARS	9689A	Serial Interface Module for IPA-IPSI

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

CONDITIONS OF CERTIFICATION:

The following conditions apply to this certificate:-

Conditions of manufacture

1. In addition to the manufacturer's performance and routine testing, it is a requirement of manufacturer that a routine test shall be carried out on each Cable Connection Module to ensure correct operation of the diodes and the value of the current limiting resistance.

Conditions of safe use

1 When mounted in a cut-out in the wall of the enclosure, the Remote Display Module RDM-1 Shall be mounted such that the enclosure maintains a degree of protection of at least IP54.

2. The equipment shall be installed according to AS/NZS 2381.1 & AS 2381.7 and satisfy the Coal Mining Electrical Rules.

3. The equipment shall be connected to systems where the earth fault current is limited to less than 480A and instantaneous peak value for the IPB and IPC relays and 80A for the IPA relay.

4. The parameters marked on the IPA, IPB and IPC units facia plates and respective modules shall be observed. Entity parameters for the CCMC are listed below;

Entity Parameters				
Config.	Uo (V)	Io (µA)	Group I	
			Co (µF)	Lo (mH)
A	24.5	3.3	4.2	1000
B	24.5	9.9	4.2	1000
C	24.5	19.8	4.2	1000

Config.

A Single CCMC single output channel – Earth

B Single CCMC all three channels parallel connection – earth

C Two CCMC all six channels parallel connection – earth

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EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
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5 The RTU-1 Remote Termination Unit, RTU-2 Remote Termination Unit RTU-CIU1 Communications Interface Module, when in a hazardous area, shall be installed in a flameproof enclosure and connections thereto shall not be considered intrinsically safe when the power cable is energized.

6. The CCMA-110V Cable Connection Module is not to be used for Earth Fault Lockout applications,

MANUFACTURER'S DOCUMENTS:

Number	Title	Rev	Date
A1708-0 Sheet 1 of 8	IPA SCHEMATIC - TERMINALS	4	1992-04-10
A1708-13	IPA Base Terminal Pin-out	2	1992-04-06
A1708-14	IPA Block Diagram	2	1992-04-06
A1708-15	IPA Typical Connection Diagram	4	1992-04-21
A1708-16	IPA SERIAL I/O PORTS CONNECTIONS	4	1992-04-24
A1708-17	IPA Enclosure	3	1992-04-21
A1708-21	IPA 1000V LINE CONNECTION MODULE CONSTRUCTION DETAILS	2	2008-12-03
A1708-22	IPA 415V LINE CONNECTION MODULE CONSTRUCTION DETAILS	2	2008-12-03
A1708-24	IPA CABLE CONNECTION MODULE 1000V ARTWORK DRAWING	1	2008-12-08
A1708-25	IPA CABLE CONNECTION MODULE 415V ARTWORK DRAWING	1	2008-12-03
A1708-27	IPA 1000V LINE CONNECTION MODULE (DIMENSIONS & MARKING)	2	2009-02-16
A1708-28	IPA 415V LINE CONNECTION MODULE (DIMENSIONS & MARKING)	2	2009-02-16
A1708-31	IPA REMOTE DISPLAY MODULE ARTWORK & TERMINAL MARKINGS	1	1992-04-06
A1708-38	IPA Proc, Board ARTWORK DRAWING	2	1992-07-28
A1708-44	IPA 3.3kV INTERFACE CCMA 3.3kV CONSTRUCTION DETAILS	3	2008-12-03
A1708-9	IPA: I.S. Components	2	1992-07-29
IKA-A-005	IKA KEYPAD MARKING DETAILS	3	2009-01-21
IKAM002	IKA INTERFACE MODULE GENERAL DETAILS	3	1994-02-11
IKA-S-001	IKA INTERFACE MODULE SCHEMATIC	3	2008-12-03
IKA-S-002	IKA Keypad Schematic	3	2008-10-01

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

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Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

Number	Title	Rev	Date
IKA-S-003	IKA INTRINSIC SAFETY COMPONENTS	4	2008-12-03
IKA-S-004	IKA INTERFACE UNI1 ARTWORK DRAWING	1	2008-12-03
IKA-S-005	IKA I.S. Keypad Module Artwork Detail	4	2008-10-01
IKA-Z-001	IKA SYSTEM MARKING DETAILS - APPROVAL DRAWING	1	2009-02-16
IPAS005	IPA Relay/Led OUTPUT Module Details	2	2009-02-04
IPA-Z-001	IPA Marking Details - Approval Drawing	1	2009-02-16
IPA-Z-002	CCMA-110V Marking & Dimension Details	1	2009-02-16
IPA-Z-003	CCMA-110V Construction Details	0	2008-12-03
IPA-Z-004	IPA I.S. Components	1	2009-01-06
IPB-E-003	IPA-IPB CIU/1 – COMMS INTERFACE MODULE SCHEMATIC	0	2008-12-03
IPB-Z-001	IPB SCHEMATIC – ALNANLOGUE BOARD - IPNUTS	1	2008-12-03
IPB-Z-002	IPB Schematic - Analog Board - Coms	0	1994-10-24
IPB-Z-003	IPB Schematic - Processor Board, Sheet 1 -Inputs	0	1994-10-24
IPB-Z-004	IPB Proc, Board, Sheet 2 –A/D	0	1994-10-24
IPB-Z-005	IPB Processor Board, Sheet 3 -Processor	0	1994-10-24
IPB-Z-006	IPB Processor Board, Sheet 3 -Battery/RAM/Clock	0	1994-10-24
IPB-Z-007	IPB Schematic - Power Supply Board	0	1994-10-24
IPB-Z-008	IPB Schematic - Relay Board	0	1994-10-24
IPB-Z-009	IPB SCHEMATIC - REMOTE TERMINATION UNIT - SHEET 1	0	2008-12-03
IPB-Z-010	IPB RELAY Analog Baord PCB APPROVAL DRAWING	0	2009-01-06
IPB-Z-011	IPB RELAY Processor, Power & RTU Boards PCB APPROVAL DRAWING	1	2008-12-01
IPB-Z-012	IPB MARKING DETAILS - APPROVAL DRAWING	3	2009-02-16
IPB-Z-013	IPB BASEPLATE DETAILS	0	2009-01-06
IPB-Z-014	IPB I.S. Components Approval DRAWING	2	2009-01-06
IPB-Z-015	IPB Typical Connection Diagram	2	2009-01-06
IPB-Z-016	HM7231.3 Transformer Construction Details	1	2009-02-16
IPB-Z-017	IPB RTU UNIT ENCLOSURE/MOUNTING DETAILS	0	2009-01-06

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

Number	Title	Rev	Date
IPB-Z-018	IPB Schematic - Remote Termination Unit - sheet 2	0	1994-10-28
IPB-Z-019	IPB-CIU CASE DETAILS APPROVAL DRAWING	0	2008-12-03
IPB-Z-020	RTU-CIU1 ARTWORK DETAILS APPROVAL DRAWING L3	0	2008-12-03
IPB-Z-023	IPB RTU-2 CONSTRUCTION DETAILS	1	2009-02-16
IPB-Z-024	RTU-2 SCHEMATIC - SHEET 1 L3	0	2008-12-03
IPB-Z-025	RTU-2 SCHEMATIC - SHEET 2	0	2008-12-03
IPB-Z-026	IPB RTU-2 - APPROVAL MARKING DETAILS	1	2009-02-16
IPB-Z-028	RDM-1k REMOTE DISPLAY MODULE GENERAL ARRANGEMENT & MOUNTING DETAILS	1	2009-02-16
IPC-Z-001	IPC 3.3kC CCMC Schematic	0	2008-09-30
IPC-Z-002	RDM1 Schematic	0	2008-09-30
IPC-Z-003	IPC CCMC-3.3k Dimension & Marking Detail	0	2008-10-01
IPC-Z-004	IPC CCMC-3.3k Construction Details	0	2008-10-01
IPC-Z-005	IPC Typical Connection Diagram	0	2008-10-01
IPC-Z-006	IPC 1000V CCMC Construction & Artwork Detail	0	2008-10-01
IPC-Z-007	IPC 1k CCMC Schematic	0	2008-09-30
IPC-Z-008	IPC 1000V CCMC Dimension & Marking Details	0	2008-10-01
IPC-Z-009	IPC 3.3kV Artwork Detail	0	2008-10-01
IPC-Z-010	IPC Analog Board V3.0 Schematic	0	2008-09-30
IPC-Z-011	IPC Analog Board Inputs V3.0	0	2008-09-30
IPC-Z-012	IPC Analog Board Coms V3.0	0	2008-09-30
IPC-Z-013	IPA/IPB/IPC Relay Base DETAILS	0	2008-10-01
IPC-Z-014	IPC Relay Base Details	0	2008-10-01
IPC-Z-015	IPC Facia Marking DETAILS	1	2009-02-16
IPC-Z-016	IPC Analog Board Artwork Detail	0	2008-10-01
IPC-Z-017	IPC Processor Connections	0	2008-09-30
IPC-Z-018	IPC Processor Inputs	0	2008-09-30
IPC-Z-019	IPC Processor ADC	0	2008-09-30
IPC-Z-020	IPC Processor CPU	0	2008-09-30

Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx 08.4071X** Original Issue No.: **0** Date of Issue: **8 March 2009**

Number	Title	Rev	Date
IPC-Z-021	IPC Processor Battery	0	2008-09-30
IPC-Z-022	IPC RDM1 Artwork Detail	0	2008-10-01
IPC-Z-023	IPC Earth Leakage Shunt DETAILS	0	2008-10-01
IPC-Z-024	IPC 415 CCMC Schematic	0	2008-09-30
IPC-Z-025	IPC 415V CCMC Dimension & Marking Details	0	2008-10-01
IPC-Z-026	IPC RTU-2 MARKING DETAILS	0	2008-12-22
IPSC-Z-005	IPSC MARKING DETAILS - APPROVAL DRAWING	1	2009-02-16
IPSI-A-002	SERIAL INTERFACE MODULE - IPSI MECHANICAL DETAILS	2	2008-12-03
IPSI-A-003	SCIENTECHNIC IPSI ISOLATION BOARD PRINTED CIRCUIT ARTWORK DETAIL	0	2008-12-03
IPSI-M-001	SCIENTECHNIC SERIAL INTERFACE MODULE - IPSI TRAFFOLYTE LABEL DETAILS	1	2008-12-03
IPSI-S-001	SCIENTECHNIC SERIAL INTERFACE MODULE – IPSI CONNECTION DIAGRAM	0	2008-12-03
IPSI-S-002	SCIENTECHNIC PROTOCOL RELAY_IPSI OPTO-COUPLER BOARD SCHEMATIC	0	2008-12-03
IPSI-Z-001	IPSI OPT110 ARRANGEMENT	0	2008-12-03
IPSI-Z-004	AMPCONTROL IPSI INTERNAL CONSTRUCTION	2	2008-12-03