

ENGINEERING BULLETIN

Ref Document No.	EB16002	Issue No.	1
Subject	MONEx Battery Overhaul Certification		
Release Date	14 th April 2016		

Purpose

PPK has become aware of a potential mis-match of certificate numbers affecting certain MONEx batteries. This bulletin is to inform affected customers of the mis-match and provide a clear explanation. Based on consultation with the NSW Department of Trade and Industry and the IECEx, PPK advises that no action is required by affected customers, however all end users should review the enclosed information and assess any specific impact on their operation.

Applicability – All in service COALTRAM® model CT08, CT10, CT10LP & CT13.

Background

Until August 2014 all MONEx products were manufactured by Connexa under IECEx certificates issued by FTZU and ANZEx certificates issued by SIMTARs.

In Aug 2014, PPK acquired all rights, intellectual property and manufacturing capability of the MONEx products from Connexa. The FTZU and SIMTARs certificates relating to MONEx products were subsequently cancelled, and new IECEx certificates were issued by MSC.

Since August 2014, all MONEx products are now manufactured by PPK under the MSC certificates.

Information

The MONEx battery module has the following related Certificates of Conformity:

- FTZU 09.0003X – cancelled
- ANZEx 10.2005X – cancelled
- MSC 14.0025X – current

The battery module also contains five battery packs which have their component-level certificate as follows:

- FTZU 09.0002U – cancelled
- ANZEx 09.2004U – cancelled
- MSC 14.0022U – current

Since gaining RSF accreditation, PPK has performed maintenance on a number of MONEx battery modules by replacing the battery pack components. This maintenance activity is per section F8 of standard AS3800.

PPK has become aware that some of these MONEx battery modules may now have mis-matched certificate numbers with their constituent battery packs. For example, a battery module originally manufactured per FTZU 09.0003X with internal battery packs manufactured per FTZU 09.0002U may now have internal battery packs manufactured per

MSC 14.0022U. Since this MSC certificate did not exist at the time of the original manufacture of the battery module, this certificate is not listed as part of the battery module certificate.

PPK has clarified this circumstance with the IECEx and the FTZU and MSC certifying bodies. All three certificates are pertaining to the same product (FTZU, SIMTARs and MSC) are the same, and are therefore interchangeable.

PPK has updated the user manual for the MONEx battery to reflect the interchangeability of the battery module and battery component certificates. This updated user manual is included as an attachment to this bulletin.

If you have any further questions regarding this matter, please forward your enquiry to Greg Giles g.giles@ppkgroup.com.au or Michael Kearsey m.kearsey@ppkgroup.com.au.

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Product description

The module is an explosion-protected storage battery with integrated battery charger. The output terminals can be energised via intrinsically safe (Ex ia) remote control circuits. In the isolated state, the main terminals are intrinsically safe (Ex ia). In the energised state, the main terminals are protected by increased safety and encapsulation.

The battery module utilises separately certified explosion protected battery components (IECEx FTZU 09.0002U).

The module is designed to compliment a power distribution module.

- The battery module (11306) steps up the battery voltage and discharges power through the power distribution module. The discharge from 11306 is controlled via external circuits.
- The main discharge terminals are classified Ex e during discharge conditions. In the isolated state, the discharge terminals from the battery module (11306) are classified Ex ia.
- The battery module (11306) receives power via the power distribution module which is then used to charge the cells. The charging terminals are classified Ex e during charging conditions.
- The battery module (11306) is able to route incoming power to the discharge terminals at the stepped up voltage and charge the batteries at the same time.
- The battery module (11306) has continuously powered Ex ia auxiliary supply circuits that are used for remote control.
- The battery module (11306) has data communications with its power distribution module and is able to report on various parameters.

The battery module (11306) utilises separately certified battery components.

The module is provided with guides to guarantee the alignment and mating of the Ex e connectors. Four (4) retaining bolts are used to fix the module to its mating apparatus.

Power control and isolation

The isolation of the Power OUT (P4) terminals to Ex ia levels is controlled via intrinsically-safe controls and safety interlock circuits.

The isolation is failsafe.

A valid safety interlock circuit is required at the signal terminals on P3 as a pre-requisite for the energisation of the Power OUT terminals. The energisation may only then be remotely controlled.

If the safety interlock is not present the Power OUT terminals may not be energised.

If the safety interlock circuit is interrupted, the Power OUT terminals will be immediately isolated. Partial removal of the battery module will automatically render the battery discharge circuits to an Ex ia state. However it is mandatory that the isolated state be selected before any attempt is made to remove the battery module.

The safety interlock is contained in the circuits in the power distribution module. The safety interlock circuit is sufficiently complex, that it could not be defeated in any operational environment, making the battery module safe to transport in potentially hazardous environments.

Compatibility

The 11306 battery module is only compatible with power distribution modules that meet the entity parameter requirements. The power distribution module 11307 has been specifically designed to meet the compatibility requirements.

Operating instructions

Refer to operating procedures for the specific power distribution module being used.

To remove the battery module (11306) from its power distribution module

- Ensure incoming power to the power distribution module is de-energised
- Ensure battery module (11306) is placed into its isolated state, (via external remote controls)
- Wait for 2 min for internal circuits to fully discharge
- Remove retaining bolts
- Lower to disengage electrical connectors and remove the battery module (11306) from its power distribution module along guides

To install a battery module (11306) into its power distribution module

- Place the battery module on the guide rails. The guide rails are designed to support the battery module at various positions. Take care not to accidentally disengage the tang on the guide rails, which will cause the module to drop abruptly
- Raise the battery module until the alignment pins engage
- Raise the battery further until the connectors engage.
- Only then shall the securing bolts be tensioned.
- No attempt should be made to otherwise force the engagement of the modules

Installation instructions

The only acceptable mounting arrangement is when fitted to a compatible power distribution module.

The recommended arrangement is when supported vertically as shown.

Locate where there is free natural air flow over the heatsinks.

Product specification

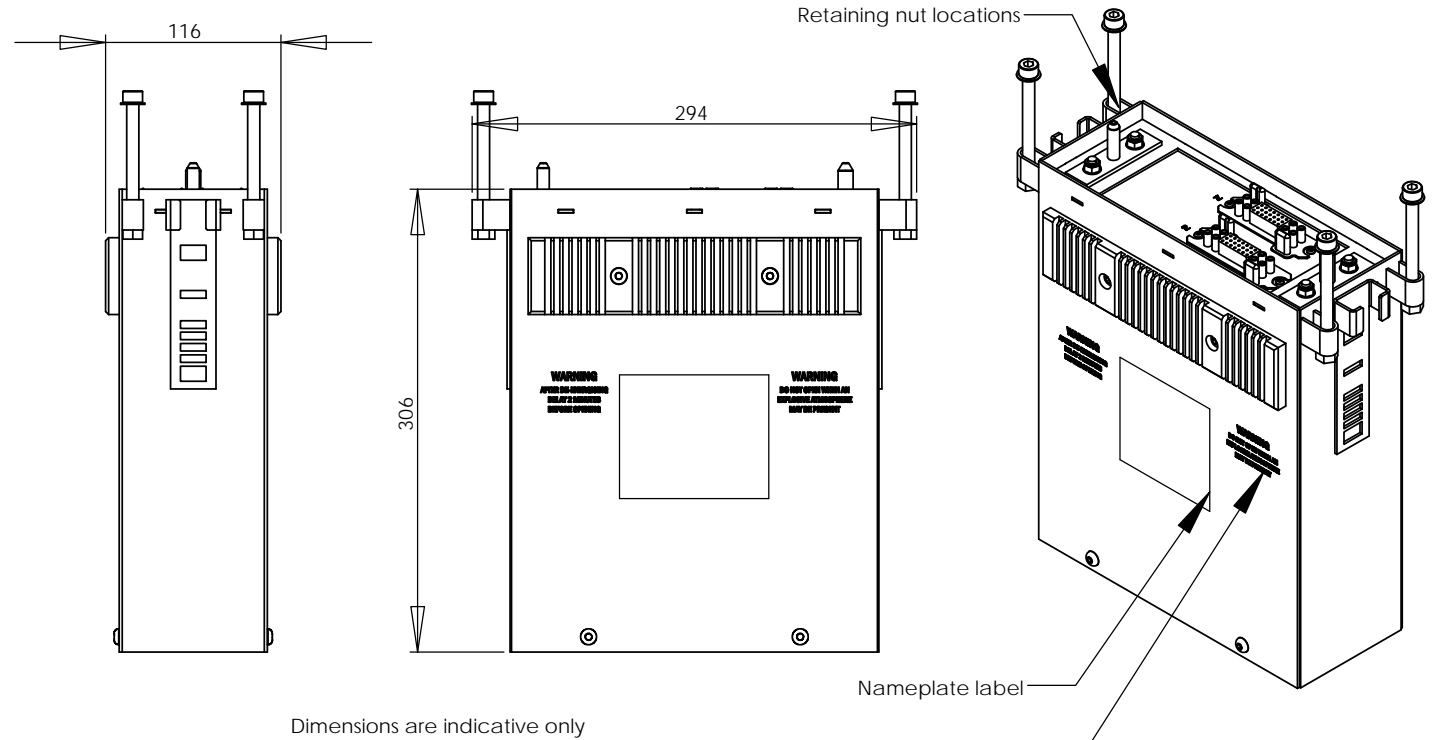
Certification Parent Type	Description	Certificate	Standard	Classification	Ambient Conditions	Ingress Protection
11306	Battery module (11.5Ahr at 13.2V)	IECEx FTZU 09.0003X ANZEx 10.2005X IECEx MSC 14.0025X	IEC 60079 Electrical apparatus for explosive gas atmospheres Part 0 - General requirements (Ed. 4.0 - 2004) Part 7 - Increased safety "e" (Ed. 4.0 - 2006) Part 11 - Intrinsic safety "i" (Ed. 5.0 - 2006) Part 18 - Encapsulation "m" (Ed. 2.0 - 2004)	Ex mb e ia l	-20 °C to +40 °C	IP54

Maintenance instructions

The battery module is not serviceable by unqualified personnel and no attempt should be made to disassemble or modify the product.

Heatsinking is provided on the outside of the module to dissipate internal losses. While explosion protection is maintained without heatsinking, do not cover heatsinks or restrict natural convection.

The ingress protection rating is achieved when correctly fitted with the battery manager module (11307).



Warnings

- Do not attempt to remove the battery module (11306) when an explosive atmosphere may be present
- Ensure the battery module (11306) is in a de-energised state and wait for 2 minutes before attempting to remove the battery module (11306)
- Ensure the source of incoming energy is de-energised and wait for 2 minutes before attempting to remove the battery module (11306)

Documentation

Clause Reference IEC60079-11	Parameters
13 a)	Electrical parameters as per product connection diagrams
13 b)	Refer installation and maintenance instructions
13 c)	n/a
13 d)	Power to be supplied from a compatible explosion protected source
13 e)	Dielectric strength to earth >1Mohm @ 500V for 60 sec
13 f)	n/a
13 g)	Designed for mining use under conditions of high pollution and elevated ambient temperatures
13 h)	n/a

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SURFACE FINISH:		TOLERANCES:		LINEAR:		ANGULAR:		TITLE: PPK MINING EQUIPMENT	
DRAWN AR		DATE 23/08/12						PART #11306 BATTERY MODULE USER MANUAL	
CHK'D MK		DATE 23/08/12							
ENG		DATE 23/08/12							
DEV		DATE 23/08/12							
Q.A		DATE 23/08/12		MATERIAL:		DWG NO. UM_11306		A3	
PART 11306				Assembly		FILE DS_11306_Battery Module_x			
CERTIFIED PARENT PART 11306						SCALE:1:5		SHEET 1 OF 1	

PRODUCT DESCRIPTION

The product is an encapsulated entry-certified battery component with a certification rating for its main terminals (T1 and T2) which is under the control of external circuits. In the isolated state, the main terminals are voltage free and intrinsically safe. In the non-isolated state, the main terminals (T1 and T2) have a voltage potential protected by increased safety.

The component has advanced battery management and safety features. Internal protection systems limit discharge currents through T1 and T2. Cell voltages are individually monitored and balanced. Communications with the battery for charge / discharge operations occurs via data communications.

Main terminals (T1 / T2)

The main terminals are used to power circuits that exceeds the safe thresholds of intrinsic safety. For field wiring termination, the (aggregated) field conductor(s) shall have a minimum cross sectional area of 4mm².

Use corrosion resistant stainless steel fasteners for connection of the main terminals. (M6 socket screw with flat washer and spring washer, tightened to 5Nm). Apply electrical varnish to exposed conductors after terminating except if

the terminal enclosure meets or exceeds IP54 requirements or otherwise as allowed by the relevant standards.

Auxiliary connector

A separate connector is provided for intrinsically circuits, including a power source, an auxiliary charging port, a battery manager communications port and a watchdog port. The recommended mating connector is "SAMTEC IPBx".

Enclosure requirements

The product may be installed in any suitable explosion protected enclosure meeting the requirements of the relevant standards.

Temperature management

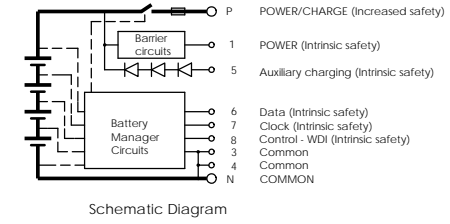
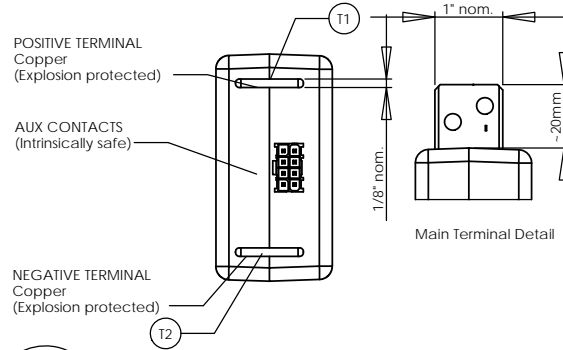
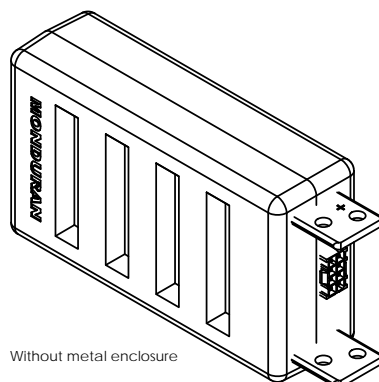
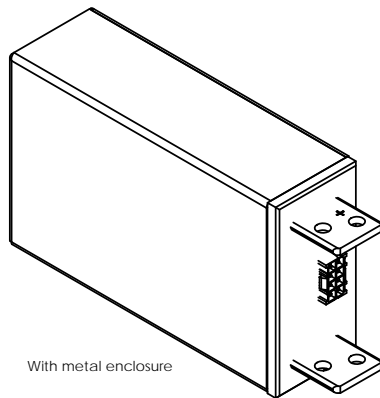
Should the cells overheat (typically - 60°C) the T1 and T2 terminals are temporarily isolated.

Options

The component may be optioned without the power terminals T1 and T2 for applications where the requirement is for exclusive intrinsic safety.

The component is certified in two forms - with and without a metal enclosure.

Certification Parent	Part Description	Certificate	Standard	Ambient Conditions	Terminals	State	Classification	Rating	Application details	
9077	Battery component	IECEX FTZU 09.0002U ANZEX 09.2004U IECEX MSC 14.0022U	IEC60079-0 2004 Explosive atmospheres - General requirements	-20 °C to +40 °C	T1-T2	When powered by the control system	Ex e I	Discharging - U : 15.2V I : 15A	Power (increased safety)	The state of the main terminals is controlled by external circuits utilising the bi-directional communications port and the watchdog port connected through the auxiliary connector. The component has features that enable external control systems meeting Category 3 of EN954-1 to be constructed. The approved fastening method for the T1/T2 terminals utilise two M6 socket screws (with flat washer and spring washer) per terminal, tightened to 5Nm The T1/T2 terminals may alternately be used for charging and discharging. Note :- Protection settings may modify the continuous attainment of the certification rating Commands provided on the data port may be used to isolate the main terminals (T1 and T2) at any time. Powering terminals T1/T2 is conditional on a healthy watchdog signal. The watchdog signal must toggle at least every 1.0s for power to be enabled at the T1 and T2 terminals. If the watchdog signal latches high or low for more than 1.0s, T1/T2 terminals will be de-energised immediately. The approved mating part for the auxiliary terminal is a Samtec type IPBS connector, which must be mechanically secured to prevent disconnection in operation. An overload exceeding -0.5A at these terminals will result in a temporary reduction of power from these terminals. The auxiliary battery charging terminals must be supplied from an Ex ia certified source and limited as detailed
			When isolated by the control system			Charging - U=15.2V I : 10A				
			IEC60079-7 2006 Explosive atmospheres - Equipment protection by increased safety, "e"		6 - 3/4 (Data) 7 - 3/4 (Clock) 8-3/4(Control)	Continuous, not controlled	Ex ia I	Per circuit - Uo : 15.2V Io : 24mA Co : 15.4uF Lo : 3.5mH		
			IEC60079-11 2006 Explosive atmospheres - Equipment protection by intrinsic safety, "I"					1 - 3/4	Uo : 15.2V Io : 3.56A Co : 10uF Lo : 40uH	
IEC60079-18 2004 Construction test and marking of type of protection encapsulation "m"	5-3/4	Ui : 15.2V Ii : 2A Ci : 0uF Li : 0mH								



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DRAWN AR		23/08/12		
CHK'D MK		23/08/12		
ENG		23/08/12		
DEV		23/08/12		
O.A		23/08/12		
PART 9077			MATERIAL: Encapsulated	
CERTIFIED PARENT PART 9077				

DO NOT SCALE DRAWING COPYRIGHT MONEX TECHNOLOGY PTY LTD		DRAWING REVISION 2
PPK MINING EQUIPMENT		
TITLE: PART #9077 BATTERY MODULE USER MANUAL		
DWG NO. UM_9077	A3	
FILE DS_9077_Battery Module_x		
SCALE:1:2	SHEET 1 OF 1	