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 SIR 06.0084X	issue No.:7
Status:	Current	
Date of Issue:	2014-08-14	Page 1 of 5

Certificate history:
Issue No. 7 (2014-8-14)
Issue No. 6 (2013-10-17)
Issue No. 5 (2012-5-31)
Issue No. 4 (2010-8-23)
Issue No. 3 (2009-11-23)
Issue No. 2 (2009-11-18)
Issue No. 1 (2009-10-14)
Issue No. 0 (2007-2-16)

Applicant: **Crowcon Detection Instruments Ltd**
172 Brook Drive
Milton Park
Abingdon
Oxon OX14 4SD
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: Ex ib d IIC T4
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: A G Boyes

Position: Certification Support Officer

Signature:
(for printed version)

Date: 2014-08-14

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.

Certificate issued by:
SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2014-08-14** Issue No.: **7**

Manufacturer: **Crowcon Detection Instruments Ltd**
172 Brook Drive
Milton Park
Abingdon
Oxon OX14 4SD
United Kingdom

Additional Manufacturing location (s):

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 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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:
GB/SIR/ExTR06.0113/00 GB/SIR/ExTR09.0157/00 GB/SIR/ExTR09.0174/00
GB/SIR/ExTR09.0180/00 GB/SIR/ExTR12.0129/00 GB/SIR/ExTR13.0279/00
GB/SIR/ExTR14.0185/00

Quality Assessment Report:

GB/BAS/QAR06.0070/00 GB/BAS/QAR06.0070/01 GB/BAS/QAR06.0070/02
GB/BAS/QAR06.0070/03

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2014-08-14** Issue No.: **7**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006) mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

1. If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2014-08-14** Issue No.: **7**

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

The Manufacturer shall comply with the following condition of manufacture:

1. The manufacturer shall ensure that the Littelfuse 259.062 fuse has a minimum resistance at +20°C of 3.642 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.0360 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 6.6 Ω).
2. The manufacturer shall ensure that the Littelfuse 278.100 fuse has a minimum resistance at +20°C of 0.850 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.00626 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 1.2 Ω).
3. The manufacturer is permitted to use the modified lithium-ion battery pack covered by this issue of the certificate as part of equipment built to previous issues of the certificate. The equipment is compatible with the lithium-ion battery pack (C01006) as well as the lead-acid batteries (C01253 & S01963).

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2014-08-14** Issue No.: **7**

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

Issue 1 – this Issue introduced the following change:	
1	To recognise modifications to the oxygen sensor PCB
Issue 2 – this Issue introduced the following changes:	
1	To permit the replacement of the lead-acid battery with a type C01006 and C01007 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
2	To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
3	The introduction of two Conditions of Manufacture
Issue 3 – this Issue introduced the following changes:	
1	A minor modification to the lithium ion battery pack circuit
2	The introduction of a further Condition of Manufacture
3	Assessment against the latest edition of the standards
Issue 4 – this Issue introduced the following changes:	
1	The addition of a window to the leather case which allows viewing of the certification information.
2	The recognition of a change of part number of the lithium-ion battery pack from C01007 to C01006 on label drawing 2298.
Issue 5 – this Issue introduced the following changes:	
1	The removal of the references to the C01007 battery pack in the Description of Equipment, Variation 2 and Conditions of Manufacture.
2	The introduction of the Tenergy 18650-30012 Li-ion cell (green jacket) as an alternative to the existing GP 1865L22 cell in the C01006 battery pack.
Issue 6 – this Issue introduced the following change:	
1.	The inductor L2 in the battery pack was changed from type TDK ACM3225-601-2P to type TDK ACP3225-102-2P.
Issue 7 – this Issue introduced the following change:	
1.	The recognition of a change of company address from 2 Blacklands Way, Abingdon, OX14 1DY to 172 Brook Drive, Milton Park, Abingdon, Oxon OX14 4SD.

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 SIR 06.0084X	issue No.:5
Status:	**Current**	
Date of Issue:	**2012-05-31**	Page 1 of 5

Certificate history:
Issue No. 5 (2012-5-31)
Issue No. 4 (2010-8-23)
Issue No. 3 (2009-11-23)
Issue No. 2 (2009-11-18)
Issue No. 1 (2009-10-14)
Issue No. 0 (2007-2-16)

Applicant: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon OX14 1DY
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: Ex ib d IIC T4
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: C Ellaby

Position: Deputy Certification Manager

Signature:
(for printed version)

Date: 2012-05-31

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.

Certificate issued by:
SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2012-05-31** Issue No.: **5**

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon OX14 1DY
United Kingdom

Manufacturing location(s):

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 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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:
GB/SIR/ExTR06.0113/00 GB/SIR/ExTR09.0157/00 GB/SIR/ExTR09.0174/00
GB/SIR/ExTR09.0180/00 GB/SIR/ExTR12.0129/00

Quality Assessment Report:

GB/BAS/QAR06.0070/00 GB/BAS/QAR06.0070/01 GB/BAS/QAR06.0070/02
GB/BAS/QAR06.0070/03

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2012-05-31** Issue No.: **5**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006) mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

The Manufacturer shall comply with the following condition of manufacture:

1. The manufacturer shall ensure that the Littelfuse 259.062 fuse has a minimum resistance at +20°C of 3.642 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.0360 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 6.6 Ω).
2. The manufacturer shall ensure that the Littelfuse 278.100 fuse has a minimum resistance at +20°C of 0.850 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.00626 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 1.2 Ω).
3. The manufacturer is permitted to use the modified lithium-ion battery pack covered by this issue of the certificate as part of equipment built to previous issues of the certificate. The equipment is compatible with the lithium-ion battery pack (C01006) as well as the lead-acid batteries (C01253 & S01963).

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of issue: **2012-05-31** Issue No.: **5**

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

Issue 1 – this Issue introduced the following change:	
1	To recognise modifications to the oxygen sensor PCB
Issue 2 – this Issue introduced the following changes:	
1	To permit the replacement of the lead-acid battery with a type C01006 and C01007 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
2	To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
3	The introduction of two Conditions of Manufacture
Issue 3 – this Issue introduced the following changes:	
1	A minor modification to the lithium ion battery pack circuit
2	The introduction of a further Condition of Manufacture
3	Assessment against the latest edition of the standards
Issue 4 – this Issue introduced the following changes:	
1	The addition of a window to the leather case which allows viewing of the certification information.
2	The recognition of a change of part number of the lithium-ion battery pack from C01007 to C01006 on label drawing 2298.
Issue 5 – this Issue introduced the following changes:	
1	The removal of the references to the C01007 battery pack in the Description of Equipment, Variation 2 and Conditions of Manufacture.
2	The introduction of the Tenergy 18650-30012 Li-ion cell (green jacket) as an alternative to the existing GP 1865L22 cell in the C01006 battery pack.

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 SIR 06.0084X	issue No.:4	Certificate history: Issue No. 4 (2010-8-23) Issue No. 3 (2009-11-23) Issue No. 2 (2009-11-18) Issue No. 1 (2009-10-14) Issue No. 0 (2007-2-16)
Status:	**Current**		
Date of Issue:	**2010-08-23**	Page 1 of 5	
Applicant:	**Crowcon Detection Instruments Ltd** 2 Blacklands Ways Abingdon OX14 1DY **United Kingdom**		
Electrical Apparatus: *Optional accessory:*	**Crowcon Triple Plus+ Gas Detector**		
Type of Protection:	**Intrinsically Safe and Flameproof**		
Marking:	**Ex ib d IIC T4** **Ta = -20°C to +50°C**		

Approved for issue on behalf of the IECEx Certification Body: D R Stubbings BA MIET

Position: Certification Manager

Signature:
(for printed version)

Date: 2010-08-23

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.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2010-08-23** Issue No.: **4**

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Manufacturing location(s):

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 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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:

GB/SIR/ExTR06.0113/00
GB/SIR/ExTR09.0157/00
GB/SIR/ExTR09.0174/00
GB/SIR/ExTR09.0180/00

Quality Assessment Report:
GB/BAS/QAR06.0070/00
GB/BAS/QAR06.0070/01
GB/BAS/QAR06.0070/02
GB/BAS/QAR06.0070/03

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2010-08-23** Issue No.: **4**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006 or C01007) mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2010-08-23** Issue No.: **4**

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

The Manufacturer shall comply with the following condition of manufacture:

1. The manufacturer shall ensure that the Littelfuse 259.062 fuse has a minimum resistance at +20°C of 3.642 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.0360 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 6.6 Ω).
2. The manufacturer shall ensure that the Littelfuse 278.100 fuse has a minimum resistance at +20°C of 0.850 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.00626 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 1.2 Ω).
3. The manufacturer is permitted to use the modified lithium-ion battery pack covered by this issue of the certificate as part of equipment built to previous issues of the certificate. The equipment is compatible with the lithium-ion battery packs (C01006 & C01007) as well as the lead-acid batteries (C01253 & S01963).

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2010-08-23** Issue No.: **4**

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

Issue 1 – this Issue introduced the following change:	
1	To recognise modifications to the oxygen sensor PCB
Issue 2 – this Issue introduced the following changes:	
1	To permit the replacement of the lead-acid battery with a type C01006 and C01007 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
2	To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
3	The introduction of two Conditions of Manufacture
Issue 3 – this Issue introduced the following changes:	
1	A minor modification to the lithium ion battery pack circuit
2	The introduction of a further Condition of Manufacture
3	Assessment against the latest edition of the standards
Issue 4 – this Issue introduced the following changes:	
1	The addition of a window to the leather case which allows viewing of the certification information.
2	The recognition of a change of part number of the lithium-ion battery pack from C01007 to C01006 on label drawing 2298.

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 SIR 06.0084X	issue No.:3	Certificate history: Issue No. 3 (2009-11-23) Issue No. 2 (2009-11-18) Issue No. 1 (2009-10-14) Issue No. 0 (2007-2-16)
Status:	Current		
Date of Issue:	2009-11-23	Page 1 of 5	

Applicant: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: **Ex ib d IIC T4**
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: D R Stubbings BA MIET

Position: Certification Manager

Signature:
(for printed version)

Date: 2009-11-23

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.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-23** Issue No.: **3**

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Manufacturing location(s):

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 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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:

GB/SIR/ExTR06.0113/00
GB/SIR/ExTR09.0157/00
GB/SIR/ExTR09.0174/00
GB/SIR/ExTR09.0180/00

Quality Assessment Report:
GB/BAS/QAR06.0070/00
GB/BAS/QAR06.0070/01

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-23** Issue No.: **3**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006 or C01007) mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

The Manufacturer shall comply with the following condition of manufacture:

1. The manufacturer shall ensure that the Littelfuse 259.062 fuse has a minimum resistance at +20°C of 3.642 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.0360 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 6.6 Ω).
2. The manufacturer shall ensure that the Littelfuse 278.100 fuse has a minimum resistance at +20°C of 0.850 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.00626 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 1.2 Ω).
3. The manufacturer is permitted to use the modified lithium-ion battery pack covered by this issue of the certificate as part of equipment built to previous issues of the certificate. The equipment is compatible with the lithium-ion battery packs (C01006 & C01007) as well as the lead-acid batteries (C01253 & S01963).

IECEx Certificate of Conformity

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

Issue 1 – this Issue introduced the following change:	
1	To recognise modifications to the oxygen sensor PCB
Issue 2 – this Issue introduced the following changes:	
1	To permit the replacement of the lead-acid battery with a type C01006 and C01007 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
2	To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
3	The introduction of two Conditions of Manufacture
Issue 3 – this Issue introduced the following changes:	
1	A minor modification to the lithium ion battery pack circuit
2	The introduction of a further Condition of Manufacture
3	Assessment against the latest edition of the standards

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 SIR 06.0084X	issue No.:2	Certificate history: Issue No. 2 (2009-11-18) Issue No. 1 (2009-10-14) Issue No. 0 (2007-2-16)
Status:	**Current**		
Date of Issue:	**2009-11-18**	Page 1 of 5	

Applicant: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: **Ex ib d IIC T4**
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: D R Stubbings BA MIET

Position: Certification Manager

Signature:
(for printed version)

Date: 2009-11-18

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.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-18** Issue No.: **2**

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Manufacturing location(s):

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 : 2000 Edition: 3.1	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2003 Edition: 5	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'
IEC 60079-11 : 1999 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

*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:

GB/SIR/ExTR06.0113/00
GB/SIR/ExTR09.0157/00
GB/SIR/ExTR09.0174/00

Quality Assessment Report:
GB/BAS/QAR06.0070/00
GB/BAS/QAR06.0070/01

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-18** Issue No.: **2**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006 or C01007) mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-18** Issue No.: **2**

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

Conditions of Manufacture

1 The manufacturer shall ensure that the Littelfuse 259.062 fuse has a minimum resistance at +20°C of 3.642 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.0360 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 6.6 Ω).

2 The manufacturer shall ensure that the Littelfuse 278.100 fuse has a minimum resistance at +20°C of 0.850 Ω. Measurements may be performed at a temperature other than +20°C, with a correction factor of +0.00626 Ω/K. (Note that the required minimum resistance is significantly below the actual minimum resistance at this temperature, which is approximately 1.2 Ω).

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-11-18** Issue No.: **2**

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

Issue 1 – this Issue introduced the following changes:	
1	To recognise modifications to the oxygen sensor PCB
Issue 2 – this Issue introduced the following changes:	
1	To permit the replacement of the lead-acid battery with a type C01006 and C01007 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
2	To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
3	The introduction of two Conditions of Manufacture

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 SIR 06.0084X	issue No.:1	Certificate history: Issue No. 1 (2009-10-14) Issue No. 0 (2007-2-16)
Status:	Current		
Date of Issue:	2009-10-14	Page 1 of 5	

Applicant: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: **Ex ib d IIC T4**
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: D R Stubbings BA MIET

Position: Certification Manager

Signature:
(for printed version)

Date: 2009-10-14

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.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-10-14** Issue No.: 1

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Manufacturing location(s):

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 : 2000 Edition: 3.1	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2003 Edition: 5	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'
IEC 60079-11 : 1999 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

*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:

GB/SIR/ExTR06.0113/00
GB/SIR/ExTR09.0157/00

Quality Assessment Report:
GB/BAS/QAR06.0070/00

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-10-14** Issue No.: **1**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies

1 Nominally 6 V lead-acid battery mounted in a separate compartment
2 Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid
3 Safety PCB
4 Sounder PCB and sounder
5 Up to four sensor modules

See EQUIPMENT (continued) for additional information

CONDITIONS OF CERTIFICATION: YES as shown below:

If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-10-14** Issue No.: **1**

EQUIPMENT(continued):

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

Oxygen
Toxic
Biased Toxic
Flammable
Thermal Conductivity
Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 06.0084X

Date of Issue: **2009-10-14** Issue No.: 1

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

Issue 1 – this Issue introduced the following changes:	
1	To recognise modifications to the oxygen sensor PCB

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 SIR 06.0084X** Issue No.: **0**

Status: **Current**

Date of Issue: **2007-02-16** Page **1** of **3**

Applicant: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Electrical Apparatus: **Crowcon Triple Plus+ Gas Detector**
Optional accessory:

Type of Protection: **Intrinsically Safe and Flameproof**

Marking: **Ex ib d IIC T4**
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: C Ellaby

Position: Certification Officer

Signature:
(for printed version)

Date: 2007-02-16

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.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: **IECEx SIR 06.0084X**

Date of Issue: **2007-02-16** Issue No.: **0**

Manufacturer: **Crowcon Detection Instruments Ltd**
2 Blacklands Ways
Abingdon
OX14 1DY
United Kingdom

Manufacturing location(s):

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 manufacture'rs 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 : 2000 Edition: 3.1	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2003 Edition: 5	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'
IEC 60079-11 : 1999 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

*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:

GB/SIR/ExTR06.0113/00

Quality Assessment Report:

GB/BAS/QAR06.0070/00

IECEx Certificate of Conformity

Certificate No.: **IECEx SIR 06.0084X**

Date of Issue: **2007-02-16** Issue No.: **0**

Schedule

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

The Triple Plus+ gas detector, which may also be called a Tank-Mate or a Gaseeker, is a portable battery-powered instrument comprising the following principal sub-assemblies:

1. Nominally 6 V lead-acid battery mounted in a separate compartment.
2. Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid.
3. Safety PCB.
4. Sounder PCB and sounder.
5. Up to four sensor modules.

The sensor modules may be chosen from the following (The modules may be used in any combination but with a maximum of one IR module):

- Oxygen
- Toxic
- Biased Toxic
- Flammable
- Thermal Conductivity
- Infra-Red.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the lead-acid battery. The cover incorporates a number of pushbuttons & LEDs and has a window to allow viewing of the liquid crystal display. There is also a piezo-electric alarm buzzer incorporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. If the Triple Plus+ is to be used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.