Original
User Instruction Manual

Version B

To be used in conjunction with
Proteus Original Instruction Manual

PROTEUS

IMPORTANT!

Do not use the Minicam equipment for ATEX inspections if:

- You have not been trained in the use of Minicam equipment
- You are not competent in conducting ATEX inspections
- You do not have the correct equipment
- The equipment is suspected as contaminated, malfunctioning, or damaged
- The equipment pressure is low

This instruction manual is applicable to the Proteus™ ATEX Zone 1 Inspection System.

A standard system and available options are covered by this document. Depending on your system configuration you may lack some of the features mentioned in this
document.

Disclaimer

Hardware and software mentioned in this document are subject to continuous
development and improvement. Consequently, there may be minor difference
between the information in the document and the performance or design of the
product. Specifications, dimensions and other statements in this document are subject to change without prior notice.

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Warranty

Limited Warranty

Congratulations on the purchase of your new Proteus™ Hazardous Environment Inspection System. Our products are the result of many years experience and continuous developments. Conscientious manufacturing and checking are essential objectives in our company. Nevertheless failures cannot be excluded totally. If this occurs, you are covered by our generous warranty. Please consider that even the best products can only be durable and work properly with the correct handling and maintenance.

Extent of the Limited Warranty

Minicam warrants that your equipment will be in good working condition and free of defects in material and/or workmanship for a period of one year. If failure occurs, which is provable due to a defect in material and/or workmanship, we will remedy it free of charge during the warranty period. We reserve the right, at our option, to repair the equipment or to replace the whole unit or the faulty parts, or to refund the then current value of the equipment, if we are unable to repair or replace the unit. The warranty is a return to base warranty and we are not liable for any shipping costs.

Conditions of the Limited Warranty

Disassembling the camera, coiler, control unit or any part of the system, without approval of the manufacturer, is forbidden! Non-compliance of this direction will result in the loss of the warranty. The beginning of the warranty period is the date of delivery. This limited warranty does not cover damage due to improper treatment of the system, inadequate maintenance, alteration, repair, normal wear and tear or external causes like lightning, fire or frost. The warranty does not cover wear and tear parts like front camera lenses, O-rings, cable, push rod, rod rollers etc. If you require warranty service please return the system with the original invoice to your dealer or the nearest Minicam Service Centre. Equipment returned must be consigned carriage paid. We will not be liable for carriage costs.

Warranty Limitations

Our responsibility under this warranty is limited to repair, replacement or refund, as set forth above. Minicam is not responsible for direct, special, incidental or consequential damages resulting from any breach of warranty including lost profits, downtime, goodwill, damage to or replacement of equipment and/or property.

Introduction

Scope of this Operators Manual

Minicam equipment falls into the following classes:

> **NON-ATEX** is not approved for Hazardous Environments, and usable only where there is deemed no possibility of Hazardous Environment.
>
> **ATEX-2** is approved for use in ATEX Zone 2 Hazardous Environments. The equipment is self-monitoring, and provides warnings to the user, but does not automatically remove inspection equipment power in the case of a problem.
>
> **ATEX-1** is approved for use in ATEX Zone 1 (and Zone 2) Hazardous Environments. The equipment is self-monitoring, and provides warnings to the user, and will automatically remove inspection equipment power in the case of a problem.

This Operators Manual describes the **ATEX-1** system requirements and operations.
For descriptions of all the additional system functionality and features outside of ATEX, please refer to the *Proteus Original Instruction Manual*.

Use of this Operators Manual

This Operators Manual is an addition to the *Proteus Original Instruction Manual*, with which it must be read in conjunction.

This manual contains important procedures and instructions which must be followed, particularly when using the ATEX-1 equipment. You must comply with
the contents of this manual plus the *Proteus Original Instruction Manual*.

All Operators are required to have in-depth knowledge of these manuals before using Minicam equipment. The manuals contain important information about
how the system works and the information the system provides. Understanding
and following these will minimise operational risks and help prolong the life of the system.

If Anything is not Clear

If you are unsure at all of any area of usage of Minicam equipment, please contact your designated Minicam Service Centre, see: www.minicam.co.uk/partner-dealers

Text Conventions

In this user manual the following text conventions are used:

Bold Font

Bold font is used for important words.
For example: This **must not** be done in reverse order.

Lists

Lists are marked as follows:

- Item 1
- Item 2

Procedure Lists

Procedures that must be performed in a specific order appear in numbered lists like this:

1 Perform this step first.
2 Perform this step second.

Symbols Used in this Manual

In this user manual the following symbols are used:

CAUTION
Caution means that you must take particular note or actions to minimise risks to safety.

POTENTIAL FOR EXPLOSION
This indicates potential explosion hazards and other dangers which can seriously compromise safety and may result in serious injury or death.

DAMAGE
Indicates instances where the inspection equipment or other property could be damaged.

NOTE
Notes give important information or guidance.

CARE
Highlights the recommended care regime required to maintain the long life of the equipment, but also importantly for ensuring compliance with the ATEX requirements.

EC Declaration of Conformity

CE Declaration

We Minicam. Unit 4 Yew Tree Way, Stonecross Park, Golborne, Warrington, WA3 3JD hereby declare that the Proteus™ ATEX System Components to which this declaration refers are in compliance with the following standards or standardizing documents where applicable to the component:

EN61000-6-4: 2007 + A1: 2011	Electromagnetic compatibility (EMC) Part 6-4: Generic standards - Emissions for industrial environment.
EN61000-6-2: 2005	Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environment.
IEC 60079-0:2017	Explosive atmospheres - Part O: Equipment - General requirements
IEC 60079-2:2014-07	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
IEC 60079-7:2017	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

The following are the stipulated operating and environmental conditions for said compliance:
Residential, business, commercial, small-company and light industrial environments.

Overview of ATEX Equipment

ATEX equipment is approved for use in Hazardous Environments, where there is some potential for presence of explosive atmospheres.

To protect against Hazardous Environments, Minicam inspection equipment is pressurised internally, which prevents any Hazardous Environment from entering the equipment, where it might be subject to sources of ignition.

Hazardous Environments

Environments where the inspection equipment is being used can be either **Hazardous** or **NON-Hazardous**.

- A **Hazardous** Environment is where there is a potential for explosive atmospheres.
- A **NON-Hazardous** Environment is where there is NO potential for explosive atmospheres.

You or a qualified person must decide whether the Environment in which the inspection equipment is being used is Hazardous or NON-Hazardous. The system cannot detect if an Environment is Hazardous or not.

You must only pressurise, or perform maintenance, or change of equipment in a NON-Hazardous Environment. You must **NEVER** open, disconnect, or reconnect inspection equipment in a Hazardous Environment.

ATEX Zones

Minicam equipment is classified according to its approvals for use in different Environments:

- **ATEX-1** – the highest level of ATEX that Minicam equipment supports. This is specialised equipment containing several high integrity design and pressure monitoring features, and a means of automatically cutting off the power supply to the inspection equipment if any low pressure condition is detected.

- **ATEX-2** – this equipment contains good pressure monitoring features, designed to meet the ATEX-2 regulations for use in explosive environments, but will **NOT** automatically remove the inspection equipment power supply if a low pressure condition is detected.

- **NON-ATEX** – this equipment still contains pressure sensing features, but is **NOT** approved for use in any explosive environments.

You or a qualified person must determine the required level of ATEX equipment, and you must use only equipment which meets those levels.

ATEX Compliance and Non-compliance

ATEX equipment can be **Compliant** or **Uncompliant**.

When powered ON, the system continuously monitors the pressures inside the ATEX equipment. If the pressures are high enough, the equipment is **Compliant**. If they fall too low, the equipment is **Uncompliant**.

NON-ATEX equipment, even when pressurised, can never be classed as being Compliant, as it does not meet the other design regulations required for full ATEX compliance.

If *any* attached ATEX equipment becomes Uncompliant, then the *whole system* is deemed Uncompliant.

So for example where a crawler and camera are used together, if only the crawler becomes Uncompliant but the camera is still Compliant, the *whole system is deemed Uncompliant*.

You must only use ATEX equipment that is *all Compliant* when it is in use in Hazardous Environments.

Use of the Equipment

Purpose of the Equipment

The Minicam equipment is for the purpose of pipeline inspections, and any other use is not permitted. If the equipment is used for any other purpose, Minicam disclaim responsibility or liability for any warranty or claim of any kind.

ATEX-1 Equipment Usage

Minicam ATEX-1 equipment may be used according to these standards:

IEC 60079-0 2018
Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-2 2015
Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure “p”

IEC 60079-7 2015
Explosive atmospheres - Part 7: Equipment protection by increased safety “e”

Permitted Use of the Equipment

Use of the Proteus™ ExZ1 pipeline inspection system in Hazardous Environments is only permitted providing, at minimum, ALL of the following are adhered to (this is not a complete list):

- Operators have been trained in use of the equipment.
- Operators have been trained in ATEX and the requirements of the ATEX standards.
- The correct and appropriate equipment is being used.
- The Operators manual needs to be kept with the equipment and referred to whenever needed.
- The use of the OVERRIDE Key must be understood and all implications accepted by the Operator.
- **ALWAYS** take heed of any system indicated warnings or other information.

- The procedures and steps in this manual **MUST** be followed.

General Equipment Usage

DO:

- Act upon any system warnings at all times.
- Stay alert and attentive of the system at all times.
- Power ON only when certain the inspection equipment is not in a Hazardous Environment.
- Regularly test the pressure monitoring system.
- Ensure pressures are adequate before placing inspection equipment in a Hazardous Environment.
- Purge and re-pressurise only in a NON-Hazardous Environment.
- Use the correct and appropriate equipment for the inspection's requirements.
- Switch off if the system shows any signs of any problem.
- Switch off and not use the equipment if it generates excessive heat.
- Stop using equipment in Hazardous Environments if you suspect it might have become damaged.
- Keep the Operators Manuals always at hand.
- Disconnect or connect components only when powered down.
- Use only the approved wheels and accessories.
- Use only the approved lowering device (for crawlers).
- Check condition of all connectors and ensure they are firmly attached before use.

- Visually inspect all equipment before use.
- Use the protective caps and covers when equipment is not in use.
- Wear ear protection if you have sensitive hearing.
- Wear applicable personal protective gear (for example gloves, hard hat, etc).

DO NOT:

- Do not use the equipment if in any doubt.
- Never pressurise, open, disconnect, or connect components in Hazardous Environments.
- Do not attach any unapproved components, materials or devices to the equipment.
- Never begin using damaged or malfunctioning equipment, however slight.
- Don't use Minicam equipment near sensitive other electrical equipment.

REMEMBER:

- ATEX equipment is only serviceable by a Minicam certified Service Centre.

Operator Responsibilities

Fundamental Safety

The Operator is responsible for using the Minicam equipment safely under all conditions. You as the Operator must have competent knowledge of the ATEX requirements and of the Minicam equipment. The Minicam ATEX-1 equipment contains an automatic power removal in the instance of low equipment pressure, but contains no other automatic safety features. There is reliance on you as the Operator to stay alert and observant.

Keeping Safe

You as the Operator, and anyone associated with the inspection, must:

- Comply with all instructions in this manual and associated manuals.
- Keep this manual and associated manuals accessible at all times.
- Be trained in use of the Minicam equipment, and keep that training
  up-to-date.
- Comply with any safety regulations that pertain to your work.
- Keep records of usage, any observed problems, servicing and repairs, and keep your co-workers informed.
- Keep your knowledge updated with best working practices and comply with them.
- Comply with any client or company process or procedures in force.

Positioning of Screens and Control Devices

Important information is shown on the system display screens, and the system requires interaction by the Operator. It is vital to ensure that the system keyboard and joysticks are readily accessible, and that the display screens are visible to the Operator at all times.

Using the Minicam Equipment

The Operator is responsible for the use of the Minicam equipment under all conditions. You as the Operator or a qualified person must:

- Determine whether the inspection requires some level of ATEX protection.
- Ensure that the equipment is undamaged and in working order before commencing the inspection.
- Stop the inspection if you have any reason to believe there is a system fault or damage.
- Assess the safety of the inspection site and any prevailing weather conditions.

Service and Repair of ATEX Equipment

Only Minicam certified appointed Service Centres are permitted to perform any servicing, internal examination or any repairs on ATEX equipment.

Care and Maintenance

For general care and maintenance, refer to the *Proteus Original Instruction Manual*.
On ATEX equipment the care and maintenance procedures are essential not only for promoting long life of the equipment, but also importantly for ensuring compliance with the ATEX requirements.

Repair and Service

Only Minicam certified appointed Service Centres are permitted to perform any servicing, internal examination or any repairs on ATEX equipment. You must not have the equipment serviced, internally examined or repaired by an unauthorised person. Not only will this invalidate any warranty, but can also immediately invalidate any ATEX compliance certification.

Spare Parts

Contact your Minicam Service Centre if you require spare parts (some parts may have to be fitted by the Service Centre).

If you suspect the equipment is contaminated, malfunctioning or damaged, do not use the equipment and contact your Service Centre.

Servicing Schedule

The Minicam ATEX equipment must be regularly serviced to check and maintain its performance, and ensure that it complies with ATEX standards. Minicam recommends that even if you do not suspect that your ATEX equipment has problems, you need to have it serviced and inspected at least once every year. If the ATEX equipment is used on a double-shift pattern, Minicam recommends servicing every 6 months. This will ensure that the ATEX equipment operates at maximum efficiency.

Identifying ATEX System Components

Equipment for use in ATEX Zone 1 Hazardous Environments has at least one of these markings:

An ExZ1 Serial Number

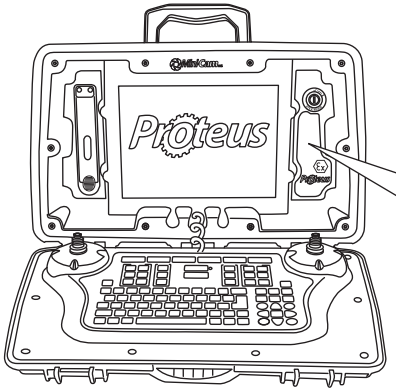
An ATEX-1 Specific Marking

Only ATEX markings containing "**2G**" are for use in ATEX-1 Environments. No other marking is permitted.

ATEX Components Markings

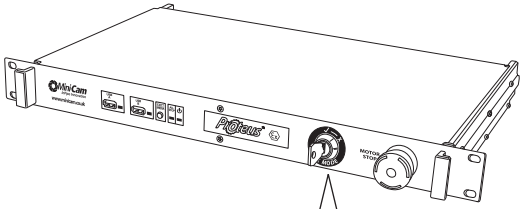
All Proteus™ ATEX components are marked with the EX symbol (Ex). You must not use any other system components for ATEX.

CCU208-ExZ1 Control Unit for ATEX-1



ATEX Identification
CCU208-ExZ1
EX Logo & OVERRIDE Key

VCU500-ExZ1 Desktop Controller for ATEX-1



ATEX Identification
VCU500-ExZ1
EX Logo & OVERRIDE Key

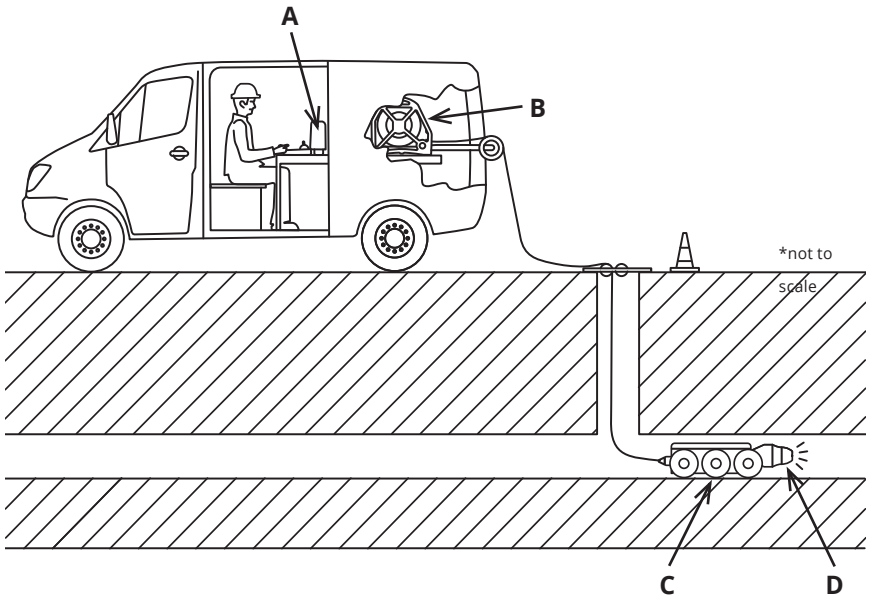
System Overview

Crawler System

The Proteus™ ATEX Zone 1 Inspection System consists of the following main components:

- Control Unit / Desktop Controller (A)
- Cable Reel (B)
- Crawler (C)
- Camera (D)

A typical configuration is shown in this illustration:



> The actual extent of the Hazardous Environment for each inspection will be defined by the nature of the inspection itself. YOU or a qualified person must determine the extent of the Hazardous Environment for each particular inspection.

ATEX Hazardous and NON-Hazardous Environment Equipment

Some parts of the system are permitted in the Hazardous Environment. These are marked as such (see Identifying ATEX System Components page 26).

Any equipment which is **NOT** marked as permitted must **NEVER** enter the Hazardous Environment. Examples of such equipment are the control panel, screens, and cable reel - this is **NOT** a complete list – always assume that if equipment is **NOT** marked as **ATEX** then it **MUST NOT** enter the Hazardous Environment.

Power Control

Steps for Powering ON

First follow the steps in section *Preparing for the Inspection* page 39, then:

Step 1: Turn on the System Power

Step 2: Decide if to use the OVERRIDE Key

Step 3: Turn on the Inspection Equipment Power

Step 1: Turning on the System Power

Press the PowerON key.

When you first turn on the system using the PowerON key, the CCU will start up but the power to the inspection equipment will remain OFF. You must tell the CCU when to apply the power to the inspection equipment. Once the system has started, you must read and accept any messages.

If the inspection requires ATEX, you must ensure that the inspection equipment is in a NON-Hazardous Environment before you apply power to the inspection equipment.

Step 2: Decide if to use OVERRIDE to Keep Power ON

For instructions on using of the OVERRIDE Lock see page 36.

The ATEX-1 monitoring system automatically removes inspection equipment power if any equipment pressures are low. But this would make it impossible for the ATEX-1 inspection equipment to report its pressures when you need to re-pressurise it to the correct values. For this reason the OVERRIDE Key can be used to force ATEX-1 inspection equipment power to remain ON even when pressures are low.

If you have no reason to use OVERRIDE, ensure the key is not in the OVERRIDE position.

Remember to turn the OVERRIDE Key back when you no longer need to use OVERRIDE.

Step 3: Turning on the Inspection Equipment Power

If the inspection requires ATEX, you must ensure that the inspection equipment is in a NON-Hazardous Environment before you apply power to the inspection equipment.

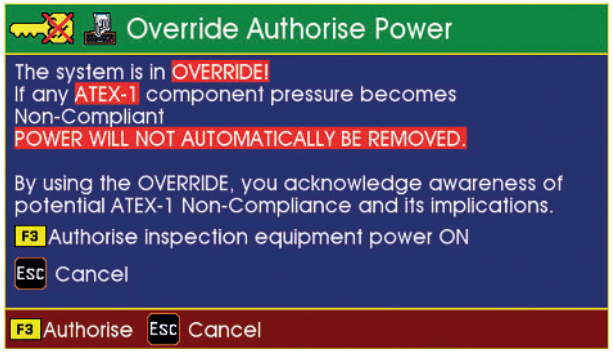
Request Inspection Equipment Power ON

Press the ALLSTOP key ALL STOP!

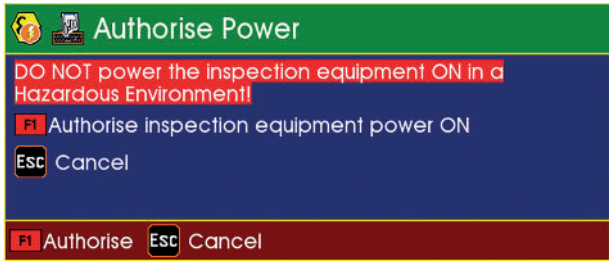
Authorise Inspection Equipment Power

Now you need to Authorise the power to the inspection equipment.

For ATEX-1, if the key is in the OVERRIDE position (see page 36), you are shown an OVERRIDE warning message like this:



In all other cases, you are shown a warning message like this:



You might need to enter a pass-code to confirm that you authorise the inspection equipment power ON. Enter the pass-code if you are asked to (the pass-code is not required on all systems).

Read and understand any messages shown on-screen, then to Authorise the inspection equipment power:

Press the Yellow F3 key if in OVERRIDE.

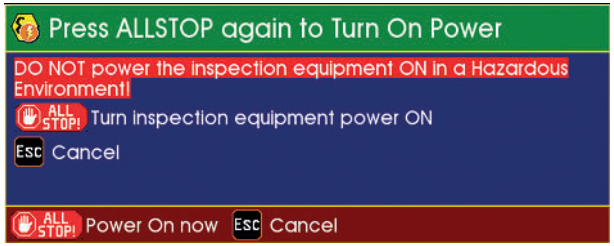
or

Press the Red F1 key in all other cases.

Turn On Inspection Equipment Power

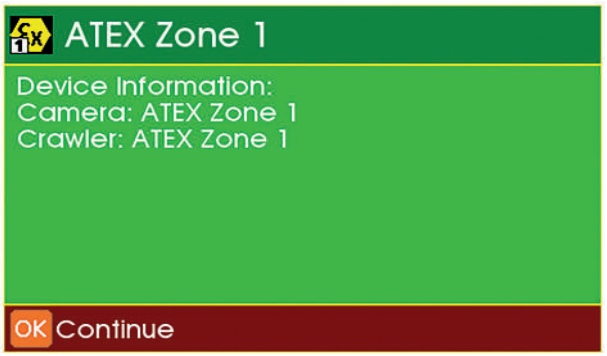
Now you are asked to press ALLSTOP again – which will actually turns on the power to the inspection equipment.

> Ensure that the inspection equipment is in a Non-Hazardous Environment before turning on the power.



Read and understand any messages shown on-screen, then press the ALLSTOP key to power the inspection equipment ON.

Upon pressing ALLSTOP, the CCU applies power to the inspection equipment, then automatically detects its capabilities. The system performs some checks, and will tell you if there are any problems. The system then shows you the ATEX Zone mode that it has selected based on the detected capabilities of the attached equipment. From then on, the power to the equipment remains ON until one of the conditions occurs to remove the power.



If performing an ATEX-1 inspection, ensure the system is showing that ATEX-1 Zone mode is detected.

The equipment is then ready for use in the Hazardous Environment.

You should check the inspection equipment pressures are adequate for the whole duration of the inspection before starting the inspection. If the pressures run low during the inspection you may have to abandon the inspection.

Maintaining the Inspection Equipment Power ON

Power to the inspection equipment will remain ON until a condition happens that causes power to be removed.

Conditions under which the system will keep power ON the inspection equipment:

- Whenever the key is in OVERRIDE position.
- When operating in ATEX-1, and all ATEX-1 inspection equipment is Compliant.

Conditions under which power will be REMOVED from the inspection equipment:

- You press the PowerON key, or the ALLSTOP key ALL STOP!

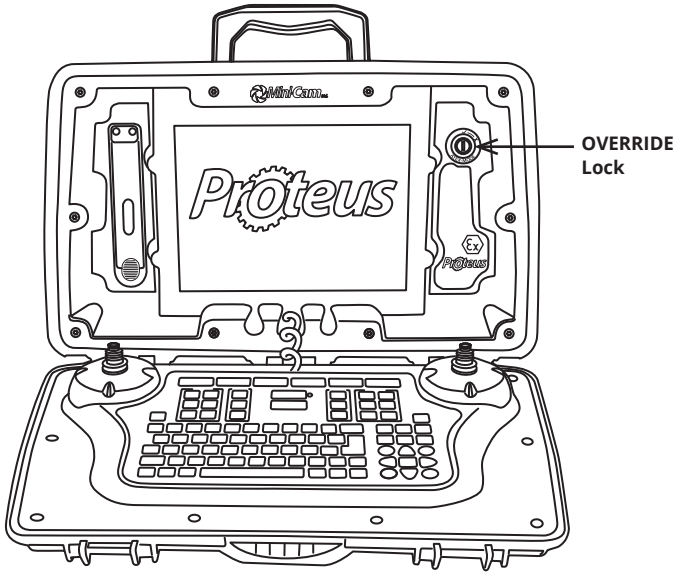
Conditions under which power will be AUTOMATICALLY REMOVED from the inspection equipment:

- ATEX-1 inspection equipment becomes Uncompliant and the key is **NOT** in OVERRIDE.
- The main power supply to the system is lost.
- A cable becomes detached.
- The system detects a malfunction within itself.

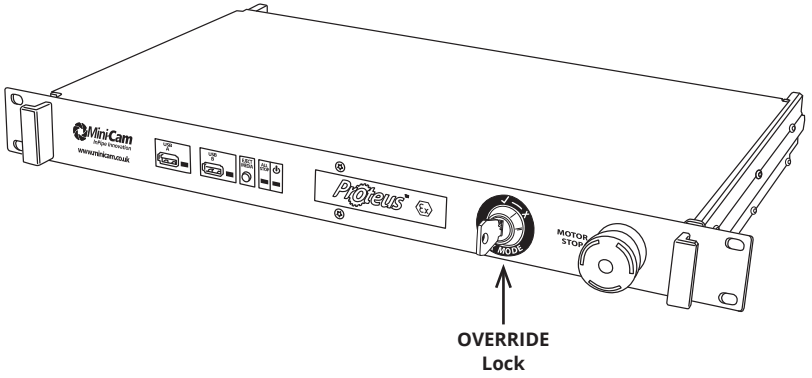
Override Lock

The Proteus CCU208-ExZ1 and VCU500-ExZ1 both feature an OVERRIDE Lock as shown below. See page 37 for instructions on how to use the OVERRIDE Lock.

CCU208-ExZ1



VCU500-ExZ1



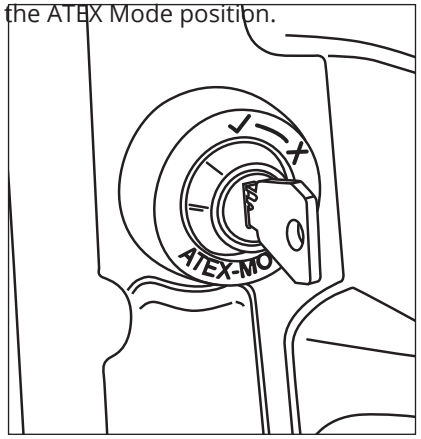
The OVERRIDE Key (see previous page) can be in either of two positions:

- ✓ **ATEX Mode**
- ✗ **OVERRIDE Mode**.

During Inspection Surveying

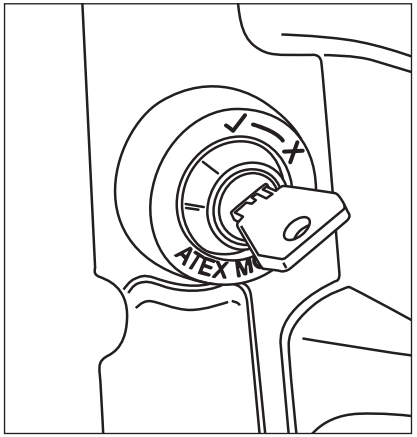
ATEX Mode

with the key in this position, the ATEX-1 uncompliant power cut-off is enabled. If the system detects ATEX uncompliant, the power supply to the inspection equipment will be cut off. You **MUST** always operate the system with the key in this position unless you have a good reason to use the OVERRIDE Mode position. You can remove the key when it is in the ATEX Mode position.



OVERRIDE Mode

With the key in this position, the ATEX-1 uncompliant power cut-off is disabled. If the system detects ATEX uncompliant, the power supply to the inspection equipment will **NOT** be cut off. You cannot remove the key when it is in the ATEX Mode position.



You must ONLY use OVERRIDE Mode if you are certain that the equipment is **NOT** in a Hazardous Environment.

Powering OFF the Inspection Equipment Power

Manually Powering OFF the Inspection Equipment Power

You can choose to power OFF the inspection equipment at any time by pressing the PowerON or (on Proteus) the ALLSTOP key

.

When conducting an ATEX inspection, if the inspection equipment has been powered OFF, you or a qualified person **MUST** ensure that the inspection equipment is in a NON-Hazardous Environment before you power it back on again.

ATEX-1 Automatically Powering OFF the Inspection Equipment Power

When in ATEX-1 Zone mode, the system itself can determine to power OFF the inspection equipment at any time automatically.

If the power is OFF because the system detected non-compliance, the only way to re-power the inspection equipment back ON is to use OVERRIDE.

If you wish to use OVERRIDE, turn the key to OVERRIDE, then follow the instructions for *Power Control* on page 30.

YOU or a qualified person must assess that the inspection equipment is in a NON-Hazardous Environment before you use OVERRIDE to power it back on again.

ATEX-1 Resetting and Restarting ATEX-1 Monitoring

Once the system has automatically removed the inspection equipment power because of ATEX-1 Uncompliant, you can reset and restart the ATEX-1 monitoring system by turning the OVERRIDE key to the OVERRIDE position, then turning it back to the ATEX position.

Preparing for the Inspection

Steps to Prepare for the Inspection

If performing an ATEX inspection, ensure you are trained and are competent in ATEX, and in the use of this system.

Follow these steps to prepare for the inspection:

Step 1 Select the appropriate system components

Step2 Connect the system components together

Step 3 Power the system and inspection equipment ON (using OVERRIDE if necessary)

Step 4 Check the component pressures

Step 5 Test the Pressure Monitoring

Step 6 Test the system operation

Step 7 Introduce the inspection equipment into the site

Selecting the System Components

You need to select and use the correct inspection equipment components for the Environment requirements of the inspection. Generally this will be one of:

- **ATEX-1** is required
- **ATEX-2** is required
- There is **no** requirement for ATEX

ATEX Zone Modes

The system operates in one of three ATEX Zone modes, according to what inspection equipment is attached:

- **ATEX-1** – ALL attached equipment is ATEX-1 approved.
- **ATEX-2** – ALL attached equipment is ATEX-2 approved.
- **NON-ATEX** – ANY attached equipment is neither ATEX-1 or ATEX-2.

Auto-Detecting the Zone Mode for the Attached Inspection Equipment

ATEX-1, ATEX-2 and NON-ATEX zone inspection equipment have different connections, so it is not possible to connect a mixture of different ATEX zone type devices together. For example, an ATEX-2 camera will not work with an ATEX-1 crawler.

The system auto-detects the ATEX capabilities of the attached equipment when you power the equipment on. The system then shows you the ATEX Zone mode that it has selected based on the attached equipment.

You must ensure that you select the correct ATEX Zone equipment for the inspection, and ensure that the system is indicating the correct ATEX Zone mode before you commence the inspection.

Equipment for use in Hazardous and NON-Hazardous Environments

See *Identifying ATEX System Components* page 26.

Equipment that is suitable for use in Hazardous Environments will have a label or marking to say so. Generally this is limited to the inspection equipment such as the camera, crawler, sonde, rod, cable, and other devices that are approved by Minicam to use with the inspection equipment.

When in Hazardous Environments you must only use approved Minicam equipment. **DO NOT** attach or use any other devices.

Equipment that must **NEVER** be used in Hazardous Environments will have no label or marking. Generally this would include for example a rod coiler, cable reel, CCU, and main power supply.

Choosing the Appropriate Inspection Equipment System Components

See *Identifying ATEX System Components* page 26.

See *ATEX Approved Wheels* page 64.

You must only use the appropriate minimum level of ATEX equipment for the particular Environment.

- If the Environment requires ATEX-1, you must use ATEX-1 equipment.
- If the Environment requires ATEX-2, you must use either ATEX-1 or ATEX-2 equipment.
- If the Environment does **NOT** require ATEX, you can use ATEX-1, or ATEX-2, or NON-ATEX equipment.

Never use NON-ATEX equipment for ATEX inspections, or when there is a chance of encountering a Hazardous Environment.

Connecting the System Components Together

Check the Condition of the Components

Before connecting any components together, always thoroughly inspect the condition of all components, especially cables, connectors, pins and camera glass.

Do not use any equipment showing signs of contamination, malfunction or damage, however slight.

Connect the Components Together

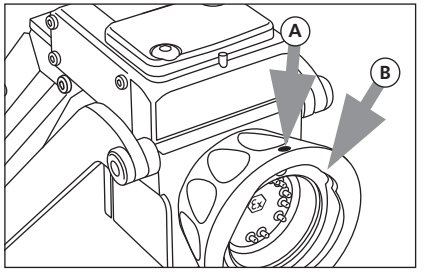
Only connect and disconnect components with the system power OFF.

For ATEX inspections, only connect and disconnect components in a NON-Hazardous Environment.

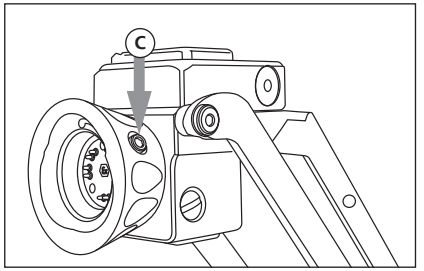
Connect the components, paying attention to connector orientation and ensuring that all connections are robust.

Camera Connector Lock

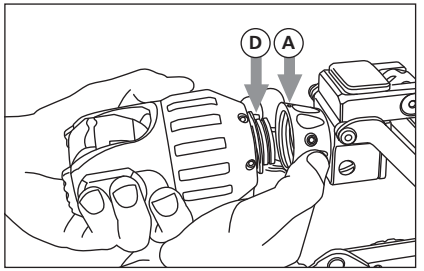
For ATEX compliance it is compulsory that the Locking Grub Screw is used. The Locking Grub Screw prevents the camera connector from becoming loose.



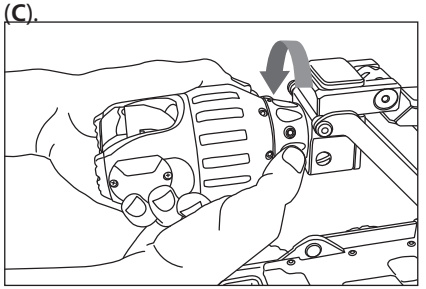
1 (**A**) Orientation Dot. (**B**) Locking Ring.



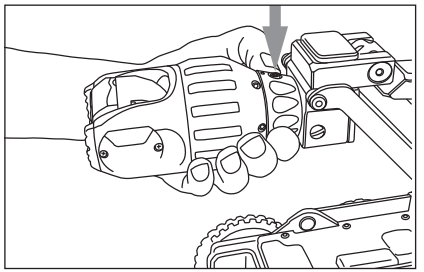
2 Familiarise yourself with the position of the Locking Grub Screw (**C**).



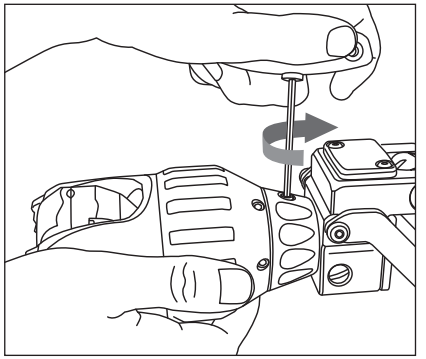
3 Offer the camera rear connector to the camera connector on the crawler, aligning the Orientation Pin (**D**) on the camera with the Orientation Dot (**A**) on the crawler.



4 Turn the Locking Ring anti-clockwise as shown, to secure the camera in place.



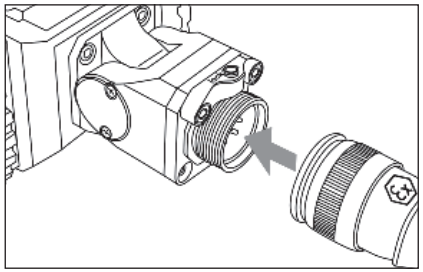
5 The position of the Locking Grub Screw should now be at the top (12 o'clock).



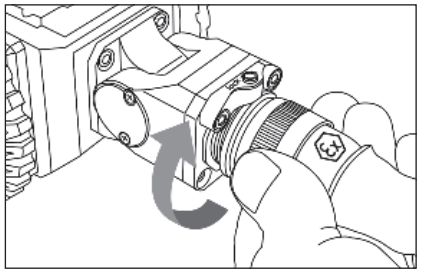
4 Use a 3mm T-Bar to screw and tighten the Locking Grub Screw. **DO NOT** over-tighten the Locking Grub Screw.

Crawler Connector Lock

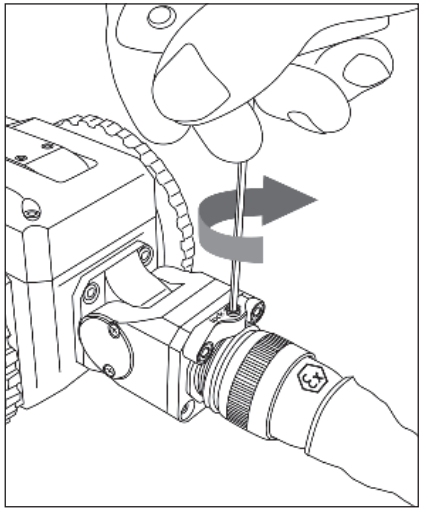
For ATEX compliance it is compulsory that the Lock Screw is used.
The Lock Screw prevents the cable connector from becoming loose.



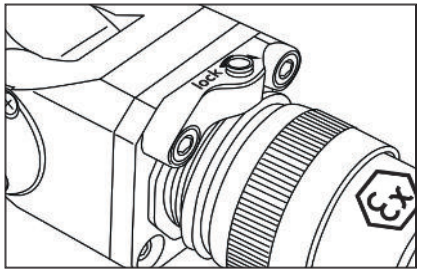
1 Ensure the cable connector and camera connector are free of dirt, grease and moisture. Offer the cable connector to align with the crawler connector.



2 Tighten the cable connector by turning in a clockwise direction as shown.



3 Use a 3mm T-Bar to tighten the Lock Screw, turning in a clockwise direction as shown. **DO NOT** over-tighten the Lock Screw.



4 The connection is now complete .

IMPORTANT!
DO NOT over-tighten the Lock Screw as this can damage the connector.

Powering the System and Inspection Equipment ON

See section *Power Control* page 30.

Checking the Inspection Equipment Pressures

Before commencing an inspection you should check that the pressures of the inspection equipment are adequate for the duration of the entire inspection. If pressure runs low during the inspection you may have to abandon the inspection.

Pressurising Components

Prior to performing an inspection, YOU **must** pressurise all components with pressure-encapsulated housings and to check the pressure, so that you ensure the tightness of all components. For the pressure test it is important that all system components are assembled, the camera cable is connected to the crawler and the control panel is in operation.

Only nitrogen is permitted as a pressurisation gas.

Checking and adjusting the Internal Pressure

If pressure has been removed completely from a system component, it is necessary to re-pressurise that system component with nitrogen (see page 48, page 49, and page 50) and to completely remove the pressure again afterwards. This procedure of pressurising with nitrogen must be repeated five times in total. This is to ensure that no explosive mixture in a flammable concentration will be present inside the equipment.

DO NOT over pressurise the components, this could lead to damage and non-compliance.

Only pressurise components in a NON-Hazardous Environment.

You may need to use the OVERRIDE Key to maintain power ON while pressurising, see *Power Control* page 30.

Illustrated instructions on how to pressurise Proteus ExZ1 components can be found as follows:

- CRP140-ExZ1 Crawler page 48
- CAM026L-ExZ1 Pan, Rotate & Laser Camera page 49
- CAM028L-ExZ1 Pan, Rotate, Zoom & Laser Camera page 50

Pressure Bar

The pressure of equipment is shown as a coloured bar. Low pressure is to the left, higher pressure is to the right. If the equipment has two pressure sensors, two bars will be shown.

All equipment should be pressurised into the green area.

RED AREA	Pressure too low / uncompliant
ORANGE AREA	Pressure low caution
YELLOW AREA	Pressure low advisory
GREEN AREA	Pressure OK
PURPLE AREA	Pressure too high, though still compliant

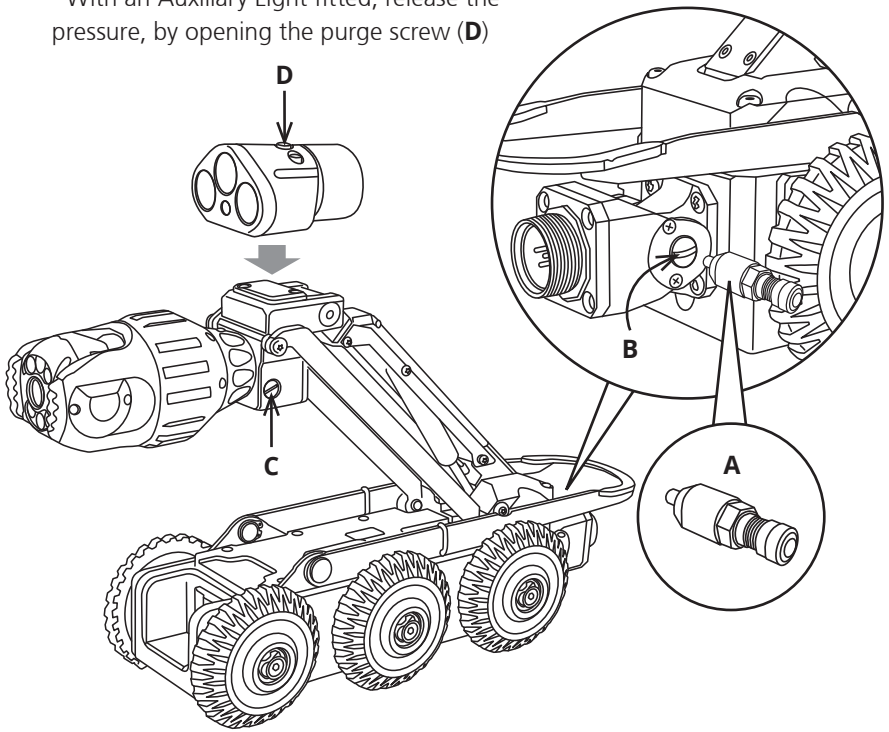
If pressures are in the ORANGE or YELLOW area, it is advisable that the equipment is repressurised before use, or there is risk that the pressures will fall too low during the inspection.

For ATEX it is essential that the equipment pressure is not in the RED area - indicating pressure is too low and non-compliant.

Pressurising CRP140-ExZ1

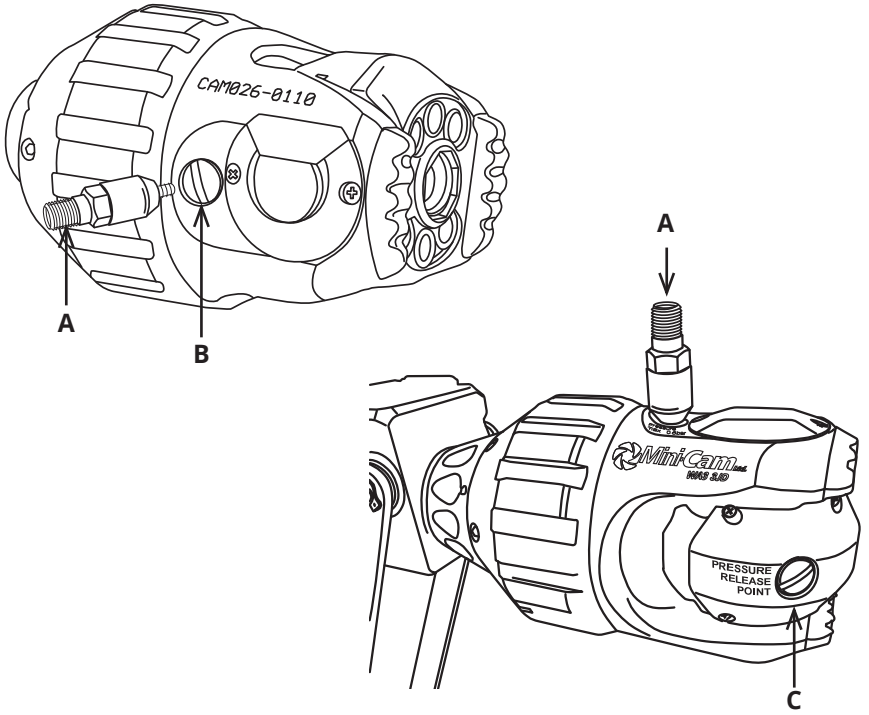
1. Connect the Proteus™ ExZ1 inspection system and apply power.
2. Unscrew the pressure valve protection cap (**B**) and screw on the pressure valve (**A**).
3. Fill the module with Nitrogen until the pressure bar is at least in the middle of the GREEN area.
4. Ensure the camera pressure is within the acceptable range by checking the pressure bar on the control unit (see page 47). Refer to the CCU section of the Original Proteus Instruction Manual for specific instructions on how to access the pressure bars. Completely remove the pressure again afterwards, by releasing through the pressure valve.
5. To release the pressure, open the purge screw (**C**)*****.
6. Repeat Steps 3,4 and 5 a further 4 times .
7. Remove the pressure valve (**A**).
8. Refit the protection cap (**B**).

*****With an Auxiliary Light fitted, release the pressure, by opening the purge screw (**D**)



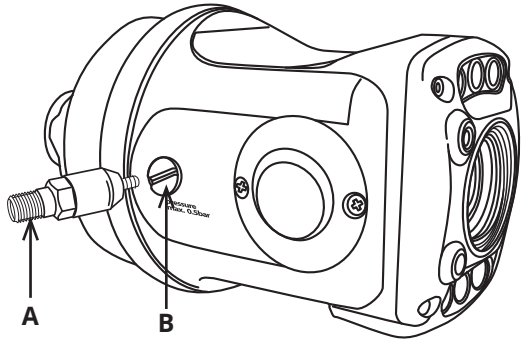
Pressurising CAM026L-ExZ1

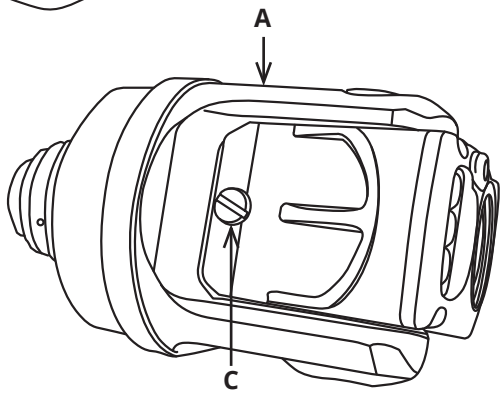
1. Connect the Proteus™ ExZ1 inspection system and apply power.
2. Unscrew the pressure valve protection cap (**B**) and screw on the pressure valve (**A**).
3. Fill the module with Nitrogen until the pressure bar is at least in the middle of the GREEN area.
4. Ensure the camera pressure is within the acceptable range by checking the pressure bar on the control unit (see page 47). Refer to the CCU section of the Original Proteus Instruction Manual for specific instructions on how to access the pressure bars. Completely remove the pressure again afterwards, by releasing through the pressure valve.
5. To release the pressure, open the purge screw (**C**).
6. Repeat Steps 3,4 and 5 a further 4 times .
7. Remove the pressure valve (**A**).
8. Refit the protection cap (**B**).



Pressurising CAM028L-ExZ1

1. Connect the Proteus™ ExZ1 inspection system and apply power.
2. Unscrew the pressure valve protection cap (**B**) and screw on the pressure valve (**A**).
3. Fill the module with Nitrogen until the pressure bar is at least in the middle of the GREEN area.
4. Ensure the camera pressure is within the acceptable range by checking the pressure bar on the control unit (see page 47). Refer to the CCU section of the Original Proteus Instruction Manual for specific instructions on how to access the pressure bars. Completely remove the pressure again afterwards, by releasing through the pressure valve.
5. To release the pressure, open the purge screw (**C**).
6. Repeat Steps 3,4 and 5 a further 4 times .
7. Remove the pressure valve (**A**).
8. Refit the protection cap (**B**).





Testing the Pressure Monitoring

It is good practice to periodically test the ATEX Compliance Detection System. The tests must only be performed in a NON-Hazardous Environment.

> You need to test the Camera and Crawler components separately. Perform the tests below on each component of the inspection equipment in turn.

Steps to Prepare for the Tests

- Ensure the inspection equipment is in a NON-Hazardous Environment.
- Connect the inspection equipment to the system.
- Turn the OVERRIDE key to OVERRIDE.
- PowerON the system.
- Turn on the inspection equipment power (see *Power Control* page30).
- If the pressure of any component of the inspection equipment is already low, you should see a warning. Press OK to clear the warning.
- Press Help, then the coloured key for the equipment you wish to test – either Crawler or Camera.
- The Compliance status of the connected inspection equipment is shown, along with the current pressures.
- Follow the procedures for pressurising the inspection equipment (see *Pressurising Components* page 46).

The Help screen should now say that all attached equipment is Compliant and of adequate pressure. The system is now ready for testing.

Steps for the Slow leak test

Prepare for this test with the inspection equipment pressures Compliant and adequate, then:

- Take a note of the inspection equipment pressures, then leave the equipment powered on and unused for 30 minutes.
- After 30 minutes, the pressures of the equipment should not have appreciably decreased (it is OK if the pressures have increased; this is due to the internals of the inspection equipment warming up).
- If pressures HAVE appreciably decreased, or a pressure WARNING is showing, the inspection equipment is NOT suitable for ATEX.

If this test fails, do not use the equipment for ATEX, and consult your Minicam Service team.

Steps for the Pressure-Drop Test

Prepare for this test with the inspection equipment pressures Compliant and adequate, then:

- Ensure the OVERRIDE key is in the ATEX position.
- Turn up the camera illumination (see section "Camera Function Keys"
  in the Proteus Original Instruction Manual) such that the camera lights are visibly ON.
- Manually cause a release of the inspection equipment pressure, by opening the purge valve slowly on the device.

The system should show a series of warnings as the pressure drops:

- Pressure low advisory
- Pressure low caution
- Pressure non-compliant

On ATEX-1 systems, when non-compliant pressure is reached, the system should also remove power to the inspection equipment.

You can tell that the power supply has been removed, as the camera illumination lights will go OFF.

If the Uncompliant warning is **NOT** shown, the system is **NOT** suitable for ATEX.

For ATEX-1, if the inspection equipment power is **NOT** removed, the system is **NOT** suitable for use.

For ATEX, if any test fails, do not use the inspection equipment, and consult your Minicam Service team.

After performing these tests, the OVERRIDE key must be returned to the ATEX position before using the inspection equipment for ATEX-1 inspections.

After manually releasing the inspection equipment pressure, it **MUST** be re-pressurised again before use.

Testing the System Operation Before Use

Test the system before use to make sure the system performs correctly.

Risk of serious injuries by falling crawler!
During the testing of the system make sure that the crawler is not positioned too close to the open manhole! When testing the driving functions the crawler may fall into the manhole. Any person in the manhole may suffer serious injuries.

Risk of disorientation and temporary blindness!
The illumination on the PROTEUS inspection system uses high power LED lighting with narrow angle secondary optics. During the testing and use of the system never look directly at the camera or auxiliary module illumination. When checking the illumination use a low power setting and view from an angle greater than 50° from the centre of the module.

Check the following system functions:

1 Control function of the crawler using the left joystick:

- Drive forwards and backwards.
- Steer left and right.

2 Control function of the camera using the right joystick (If Pan & Rotate camera head):

- Rotation left and right.
- Pan up and down.

3 Lighting control of camera head and auxiliary module (if fitted):

- Turn the light intensity up and down.

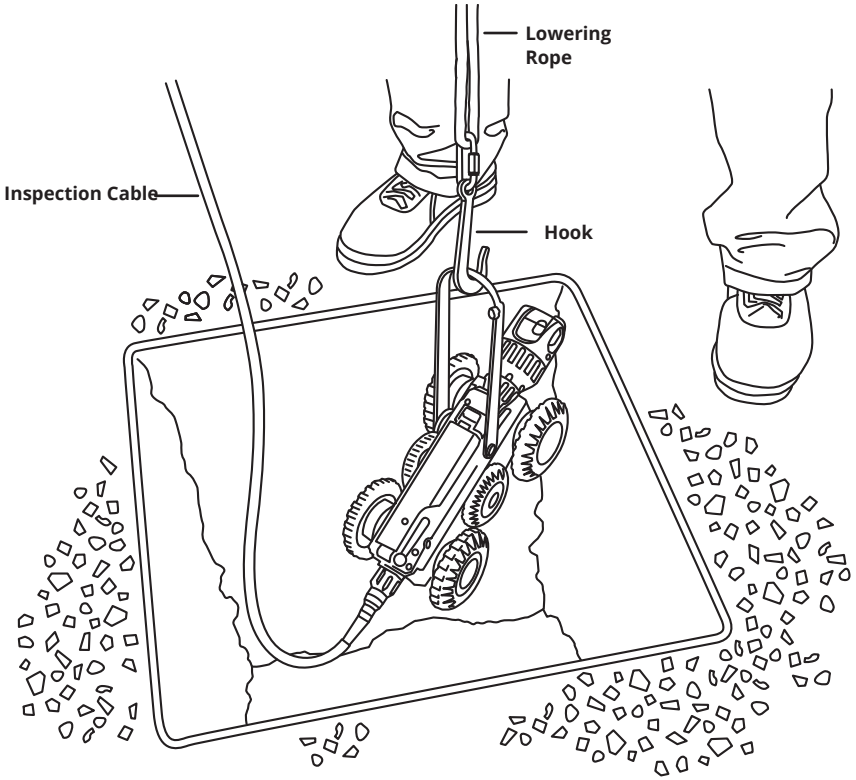
4 Check function of the rear view camera and rear lights (if auxiliary module is fitted):

- Press the Backeye button. Camera view will change to rear view.
- Turn the light intensity up and down.
- Press the Backeye button again. Camera view will revert to forward view.

Introducing the Inspection Equipment into the Site

Crawler Lowering Rope

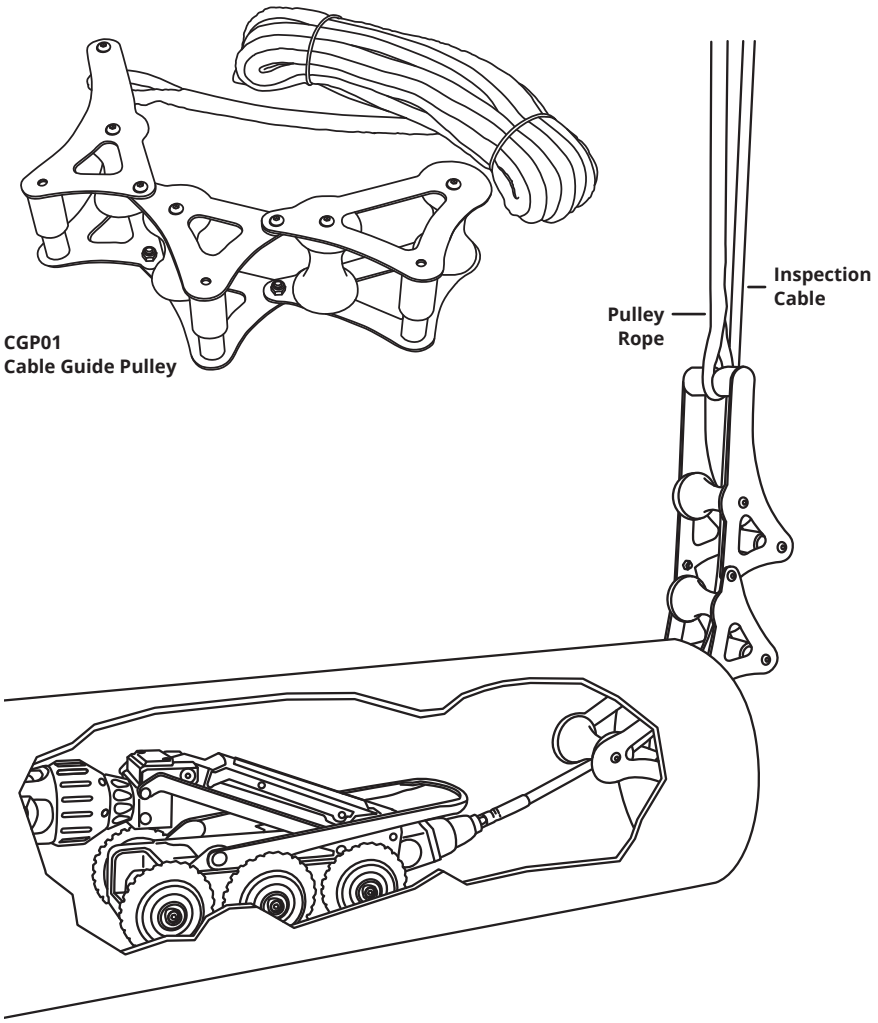
For the purpose of lowering the crawler into the ATEX Zone1 environment the lowering rope with hook (supplied with the crawler) should be used. The lowering rope takes the weight of the crawler and eliminates strain on the inspection cable.Take care when lowering the crawler to avoid contact with the inspection chamber walls.



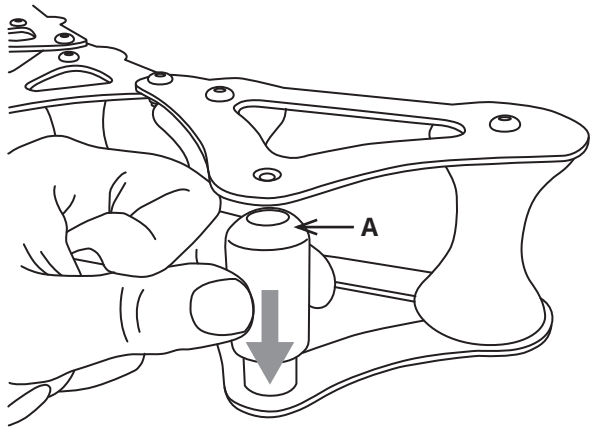
You **must never** lower the crawler into the chamber using the inspection cable.

Cable Guide Pulley

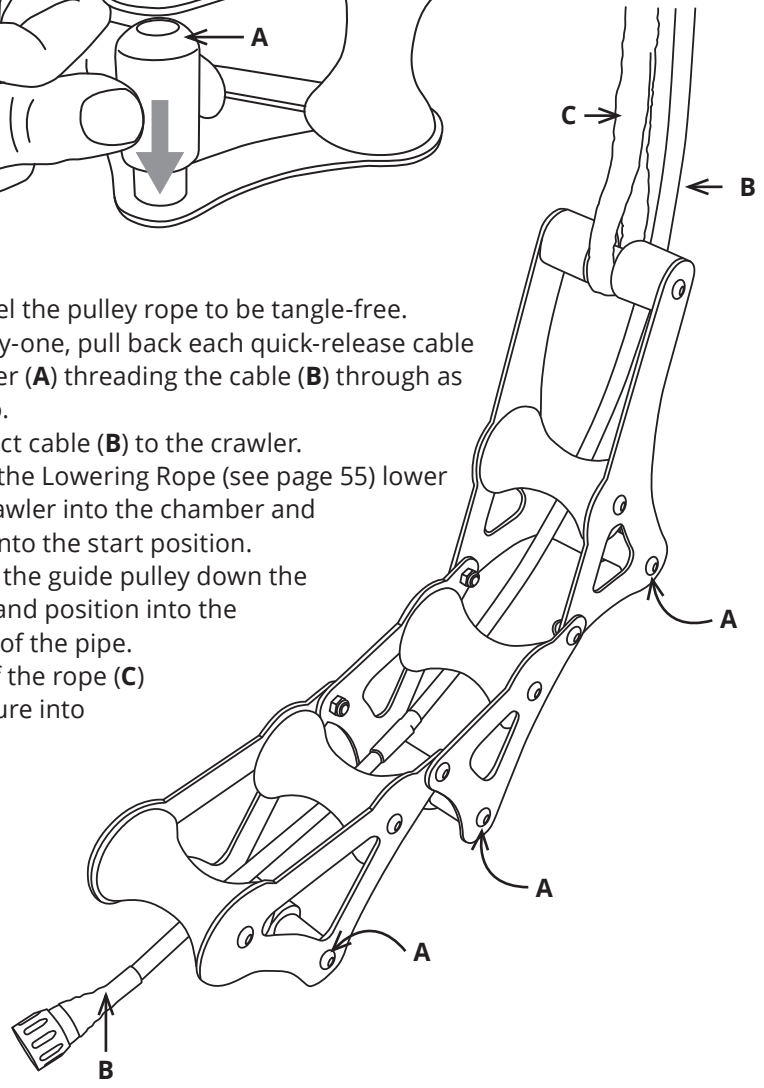
To extend the life of the inspection cable, and help prevent kinks and chaffing agaist the chamber edge, the CGP01 Proteus Cable Guide Pulley should be used. The Pulley also assists in the smooth guiding of inspection cable during the survey. See page 57 for instructions on using the CGP01.



Using CGP01 Cable Guide Pulley



1 Unravel the pulley rope to be tangle-free.
2 One-by-one, pull back each quick-release cable retainer (**A**) threading the cable (**B**) through as you go.
3 Connect cable (**B**) to the crawler.
4 Using the Lowering Rope (see page 55) lower the crawler into the chamber and drive into the start position.
5 Lower the guide pulley down the cable and position into the invert of the pipe.
6 Tie-off the rope (**C**) to secure into place.



During the Inspection

During ATEX inspections you should keep the inspection equipment power ON at all times, unless there is reason for you to manually remove the power (or because ATEX-1 monitoring has removed the power itself). This is in order to ensure that the pressure and compliance monitoring of the inspection equipment is constantly active throughout the inspection.

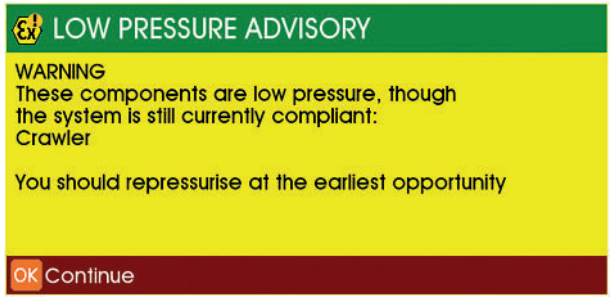
Pressure and Compliance Monitoring

Pressure Warnings

All the time that the inspection equipment is powered ON, the pressures of the inspection equipment are being monitored. If a pressure begins to get low, the CCU shows a series of warnings.

Advisory Warning

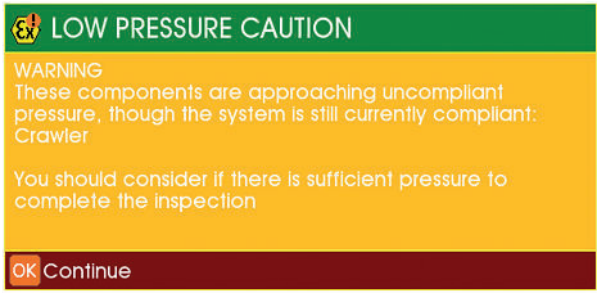
The **first** warning is advisory – the inspection equipment pressure is getting low, and you should re-pressurise at the earliest opportunity. The warning tells you which inspection equipment is getting low on pressure.



You must press OK to acknowledge this warning. The inspection equipment can still be used as the pressure is still Compliant.

Cautionary Warning

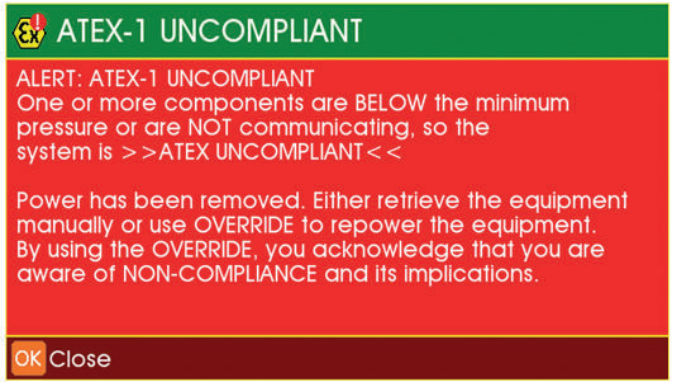
The **second** warning is cautionary – the inspection equipment pressure is getting near to the Uncompliant low pressure, and you should consider whether the remaining pressure is adequate for you to continue the inspection, or whether you should abandon the inspection and re-pressurise before continuing.



You must press OK to acknowledge this warning. The inspection equipment can still be used as the pressure is still Compliant.

ATEX-1 Pressure Uncompliant

When the system is in ATEX-1 Zone mode and the pressure in any inspection equipment falls below a 'Compliant' limit, the CCU will show an alert and the power to the inspection equipment will be removed:



Press OK to acknowledge the alert, and then choose whether to continue using the Uncompliant inspection equipment by switching to OVERRIDE and powering ON again, or whether to abandon the survey and remove the

inspection equipment manually without power.

The equipment is liable to damage if being used with Uncompliant pressure.

The system is no longer ATEX-1 Compliant.

YOU or a qualified person must decide if to continue using Uncompliant equipment in a Hazardous Environment by using OVERRIDE. As the equipment no longer compiles with the ATEX requirements, you should NOT re-power the inspection equipment and should retrieve the inspection equipment manually. The system will make an internal log of your choice.

Manually Monitoring the Inspection Equipment

Throughout the inspection you should yourself monitor the visible condition and operation of the inspection equipment. If at any time during the inspection you have reason to think that the equipment may be contaminated, malfunctioning or damaged, you should abandon the inspection and manually remove the power to the inspection equipment yourself:

- Press the PowerON key or the ALLSTOP key

At the End of the Inspection

Removing the Inspection Equipment from the Site

At the end of the inspection, carefully reverse and remove the inspection equipment from the site, taking care not to cause damage to the equipment or objects around it. Remember that the Hazardous Environment may exist outside of the immediate inspection site.

Move the inspection equipment outside of the Hazardous Environment.

When you have finished the inspection and are reversing or removing the inspection equipment you should keep the inspection equipment power ON until you have removed the equipment from the Hazardous Environment. This is because if you power OFF the equipment and then find a need to re-power it while it is still in the Hazardous Environment there will be a need to make a judgement for whether re-powering is safe. This does not apply if the power has already been removed automatically by the system, for example in the case of ATEX-1 uncompliant. In these cases you should leave the inspection equipment power OFF.

Powering the Inspection Equipment OFF

When the inspection equipment is outside of the Hazardous Zone, you can power the inspection equipment OFF:

- Press the PowerON key or the ALLSTOP key

You can now disconnect the equipment components.

Checking the Equipment

After each inspection you should check the equipment components for signs of wear, contamination, damage or anomalies, paying particular attention to the inspection cable for any rips, tears or cracks, and have these attended to by your Minicam approved Service Centre as soon as possible, so that the equipment is immediately usable again the next time it is needed.

If you Noticed any Problems

If you noticed any problems or anomalies while using the equipment you should make this known to your co-workers and colleagues, and report these to your Minicam approved Service Centre for attention.

Storage and Transportation

Store the inspection equipment securely during transportation to minimise the possibility of damage during transit.

Appendices

ATEX Approved Wheels

For operation in hazardous environments with potentially explosive atmospheres, only specially designated Proteus™ ExZ1 wheels may be integrated into a Proteus™ ExZ1 system. In the case of non-compliance, e.g. when combining ExZ1 components with components without ATEX certification, Minicam and its Service Partners declines any responsibility and shall not be held liable for any claim.

CRP140-ExZ1 CRAWLER	Product Code	Description	Recommended for pipe diameter	Quantity required
	QRW90-ExZ1	90mm Soft Rubber Quick Release Wheel	150mm	6
	QRW115-ExZ1	115mm Soft Rubber Quick Release Wheel	200mm to 300mm	4
	QRW140-ExZ1	140mm Soft Rubber Quick Release Wheel	300mm to 450mm	4
	QRW140XL-ExZ1	140mm Extra Wide Soft Rubber Quick Release Wheel	450mm to 600mm	4

Maximum Ratings

Parameter	Minimum	Maximum	Units
Operating ambient temperature	-10	+40	Degrees C
Operating atmospheric pressure*	970	1060	Millibars
Control System operating environment	-	IP45	IP rating
Inspection Equipment operating environment	-	IP67	IP rating

**Though the system may operate outside of these pressures, ATEX-1 compliance cannot be guaranteed.*

Troubleshooting

If these troubleshooting steps do not solve the problem, contact your Minicam Service Centre.

Problem	Cause	Remedy
Inspection Equipment will not switch on *-OR-* Inspection Equipment switches off unexpectedly	Bad connection.	Visually check all connections and cables for damage and tightness.
	Low inspection equipment pressure.	Check "Pressure Bar" indication and re-pressurise if necessary.
	Power supply.	Check system power supply is connected and operating.
Inspection Equipment will not pressurise	Leak.	Visually check for signs of leaks or damage.
	Purge valve not tight.	Check tightness of purge valves.

WEEE Statement

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment are obligated to take back such products at the end of their useful life. Minicam will comply with the product take back requirements at the end of life of Minicam products that are sold into the EU.

For disposal contact Minicam or the Minicam partner in your country.

Information on Disposal for Business Users
Your Proteus CCU is marked with the symbol shown above. It means that used electrical and electronic products should not be disposed of in with general household waste. Contact your Local Council who will advise on the correct recycling procedure to follow.

In the European Union
Please contact Minicam or you nearest Minicam Service Centre who will inform you about the take-back of the product. You may be charged for the cost arising from take-back and recycling. Small products (and small amounts) might be taken back by your local collection facilities.

For Spain
Please contact the established collection system of your local authority for take-back of your used product.

Countries outside the EU
If you wish to dispose of your Proteus CCU, please contact your local authorities and ask for the correct method of disposal.

Batteries

As a producer of industrial batteries under the Waste Batteries and Accumulators Regulations 2009, we Minicam produce Lithium Ion batteries. We are obliged to take back free of charge, waste industrial batteries supplied to an end user for treatment and recycling. We are required to do this in any calendar year we place new industrial batteries on the market. If any of our customers or in certain cases other end users, require us to take back industrial batteries, they should contact us at:

Minicam Limited
Raven Locks
Ravenscraig Road
Bolton
M38 9PU
United Kingdom

Tel: +44 (0)1942 270524
Email: info@minicam.co.uk
www.minicamgroup.com

We will agree the necessary arrangements for the return, proper treatment and
recycling of the waste industrial batteries.

Useful Information

UK Customers
For service and repair contact Minicam
Tel: 01942 270524
Email: service@minicam.co.uk

International Customers
For service and repair contact your local Minicam Approved Dealer

To view "How To" Videos visit www.minicam.co.uk

EU - Type Examination Certificate (Page 1 of 2)

BUREAU VERITAS

EU - Type Examination Certificate

(1)

(2) Equipment and protective systems intended for use in potentially explosive atmospheres – **Directive 2014/34/EU**

(3) EU - Type Examination Certificate Number

EPS 20 ATEX 1 017 X **Revision 0**

(4) Equipment: Proteus Inspection System

(5) Manufacturer: Mini-Cam Limited

(6) Address: Unit 4, Yew Tree Way, Stonecross Park
WA3 3JD Golborne
Warrington - England

(7) This equipment and any acceptable variation thereto are specified in the annex to this certificate and the documentation therein referred to.

(8) Bureau Veritas Consumer Products Services Germany GmbH, notified body No. 2004 in accordance with Article 21 given in the Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in the confidential documentation under the reference number 19TH0541.

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN 60079-0:2018 **EN 60079-2:2014** **EN 60079-7:2015**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the annex to this certificate.

(11) This EU - Type Examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture of this equipment and its placing on the market. Those requirements are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2G Ex eb pxb IIB T4 Gb

Certification department of explosion protection Hamburg, 2020-02-14

H. Schaffer

Page 1 of 2

Certificates without signature and seal are void. This certificate is allowed to be distributed only if not modified. Extracts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH. EPS 20 ATEX 1 017 X, Revision 0.

BUREAU VERITAS Gehleckerring 40, 22419 Hamburg, Germany cps-hamburg@de.bureauveritas.com

EU - Type Examination Certificate (Page 2 of 2)

(13) **Annex**

(14) **EU - Type Examination Certificate EPS 20 ATEX 1 017 X** **Revision 0**

(15) Description of equipment:

The Proteus Inspection System is a modular system designed for the inspection of pipeline systems comprising potentially explosive atmospheres. It consists of a Camera Head of the two possible types CAM026L-ExZ1 or CAM028L-ExZ1 driven by a Crawler CRP140-ExZ1. The crawler may additionally be equipped with Auxiliary Lights with a Backeye Camera of the types ALB300-ExZ1 or APB300-ExZ1. The camera head and the crawler are individually protected by static pressurization. The connection to the external controller as well as the connection between crawler and camera are by two separate connectors protected by type of protection "eb", also part of this certification.

The system is controlled from outside of the potentially hazardous area by either one of the two control units CCU208-ExZ1 or VCU500-ExZ1.

The camera of type CAM026L-ExZ1 (and only of this type) may also be mounted on the Ex-certified Push Camera System SOLOPro+, which is subject of a separate type certification (EPS 20 ATEX 1 018 X).

Optionally the crawler may be mounted on the Cradle PCC01-ExZ1.

Any other configuration is not part of this certification.

Electrical data:

See user manual.

(16) Reference number: 19TH0541

(17) Special conditions for safe use:

Ambient temperature range: -10°C ≤ Ta ≤ +40°C

Nitrogen has to be used as the inert gas.

Filling of the pressurized volumes has to be done in accordance with the respective instructions given in the user manual.

Prior to initial operation and after loss of the minimum permissible overpressure, the system has to be purged in accordance with the respective instructions given in the user manual.

Pressurization may only be done in a non-hazardous area.

(18) Essential health and safety requirements:

Met by compliance with standards.

Certification department of explosion protection
by
H. Schaffer

Hamburg, 2020-02-14

Certificates without signature and seal are void. This certificate is allowed to be distributed only if not modified. Extracts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH. EPS 20 ATEX 1 017 X, Revision 0.

BUREAU VERITAS Dahleckerring 40, 22419 Hamburg, Germany cps-hamburg@de.bureauveritas.com

IECEx Certificate of Conformity (Page 1 of 3)

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx EPS 20.0001X**	Page 1 of 3	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2020-02-14		
Applicant:	**Mini-Cam Limited** Unit 4, Yew Tree Way, Stonecross Park Warrington WA3 3JD Golborne **United Kingdom**		
Equipment:	**Pipe Inspection System "Proteus"**		
Optional accessory:			
Type of Protection:	**"e", "p"**		
Marking:	Ex eb pxb IIB T4 Gb		

Approved for issue on behalf of the IECEx Certification Body: **Holger Schaffer**

Position: **Head of Certification**

Signature: (for printed version)

Date: 2020-02-14

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

Certificate issued by:

Bureau Veritas Consumer Products Services Germany GmbH
Businesspark A96
86842 Türkheim
Germany

IECEx Certificate of Conformity (Page 2 of 3)

IECEx Certificate of Conformity

Certificate No.:	**IECEx EPS 20.0001X**	Page 2 of 3
Date of issue:	2020-02-14	Issue No: 0

Manufacturer: **Mini-Cam Limited**
Unit 4, Yew Tree Way, Stonecross Park
Warrington WA3 3JD Golborne
United Kingdom

Additional manufacturing locations:

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

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

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-2:2014-07 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
Edition:6

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/EPS/ExTR20.0001/00

Quality Assessment Report:

DE/EPS/QAR19.0012/00

IECEx Certificate of Conformity (Page 3 of 3)

IECEx Certificate of Conformity

Certificate No.:	**IECEx EPS 20.0001X**	Page 3 of 3
Date of issue:	2020-02-14	Issue No: 0

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

The Proteus Inspection System is a modular system designed for the inspection of pipeline systems comprising potentially explosive atmospheres. It consists of a Camera Head of the two possible types CAM026L-ExZ1 or CAM028L-ExZ1 driven by a Crawler CRP140-ExZ1. The crawler may additionally be equipped with Auxiliary Lights with a Backeye Camera of the types ALB300-ExZ1 or APB300-ExZ1. The camera head and the crawler are individually protected by static pressurization. The connection to the external controller as well as the connection between crawler and camera are by two separate connectors protected by type of protection "eb", also part of this certification.

The system is controlled from outside of the potentially hazardous area by either one of the two control units CCU208-ExZ1 or VCU500-ExZ1.

The camera of type CAM026L-ExZ1 (and only of this type) may also be mounted on the Ex-certified Push Camera System SOLOPro+, which is subject of a separate type certification (IECEx EPS 20.0002X).

Optionally the crawler may be mounted on the Cradle PCC01-ExZ1.

Any other configuration is not part of this certification.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Ambient temperature range: -10°C ≤ Ta ≤ +40°C
- Nitrogen has to be used as the inert gas.
- Filling of the pressurized volumes has to be done in accordance with the respective instructions given in the user manual.
- Prior to initial operation and after loss of the minimum permissible overpressure, the system has to be purged in accordance with the respective instructions given in the user manual.
- Pressurization may only be done in a non-hazardous area.

Notes

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