

PROTEUS LITE

Original Instruction Manual

Version D



This instruction manual is applicable to the Proteus™ Lite 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™ Lite 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 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.

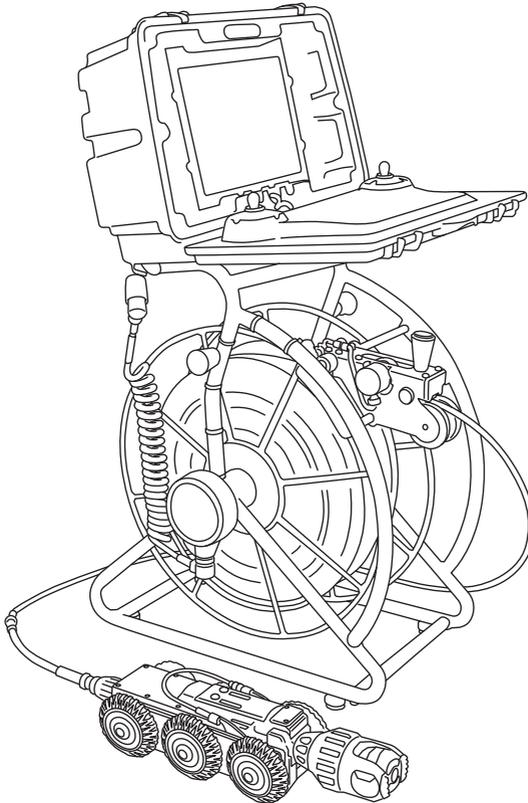
Warranty Limitations

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

Minicam's Proteus™ Lite brings together, the tried and trusted performance and reliability of the Proteus family, in a value for money, entry level system. Proteus Lite is the ideal starter kit for a one-man operation, integration into a small inspection van, or a low-cost option for larger companies to use for off-road, remote locations. Proteus Lite provides all the resources required to undertake efficient, easy to perform inspections, and with ProPIPE+ and WinCan Embedded software as standard, you can deliver accurate, detailed reports, instantly on-site.

The system comprises a CCU208 Control Unit, RMPL250 Reel, CPL150 Crawler and CAM026 Pan & Rotate Camera.
(CAM027 Axial Camera can be purchase as an optional extra)



Text Conventions

Danger, Caution and Note

In this user manual the following symbols are used:



DANGER!

Danger means a potentially dangerous situation that can cause death or severe bodily injury. The icon identifies the type of risk.



CAUTION!

Caution means that the system or equipment can be damaged or data lost. The icon identifies the type of risk.



NOTE!

Notes are used to convey throughout this manual important information or guidance for system use.

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

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.

Menu Selections

When describing control unit operation, sequential menu selections are described in the following format:

Setup > Camera > Enable Backeye Camera > OK

This example describes pressing the Setup key and selecting the Camera and Backeye options, and finally pressing the OK key.

Product Description

The inspection system Proteus™ Lite is a modular system designed for, but not limited to, inspecting pipeline systems. Using a variety of colour cameras, optional modules and accessories, the Proteus™ Lite platform offers everything needed for professional pipeline inspection.

The comprehensive list of modules and accessories allow inspection of pipes equal to and greater than 150mm diameter. Different wheel sets and accessories allow the crawler to be centred in pipe sizes from 150mm to 1000mm.

The Auxiliary Light with Backeye Camera provides additional forward illumination and a colour rear view camera with illumination to aid manoeuvring the crawler in reverse. The system uses a control unit with twin joysticks, keyboard, and reporting software developed in-house by Minicam.

Built using high quality materials and state of the art technology the Proteus™ Lite inspection system is a robust and powerful tool for use in harsh environments.

EC Declaration of Conformity

CE Declaration

We Minicam. Raven Locks, Ravenscraig Road, Bolton, United Kingdom, M38 9PU hereby declare that the product PROTEUS™ to which this declaration refers is in compliance with the following standards or standardizing documents:

EN61000-6-2:2005 Generic standards - Immunity for industrial environments.

EN61000-6-4:2007 Generic standards - Emission for industrial environments
measurement, control, and laboratory use.

EHSR MSD Essential Health and Safety requirements of Machinery Safety Directive.

The following are the stipulated operating and environmental conditions for said compliance:

Residential, business, commercial, small-company and light industrial environments.

This declaration is based on test report(s) of the relevant EMC testing laboratory.

Authorised representative in the EU:

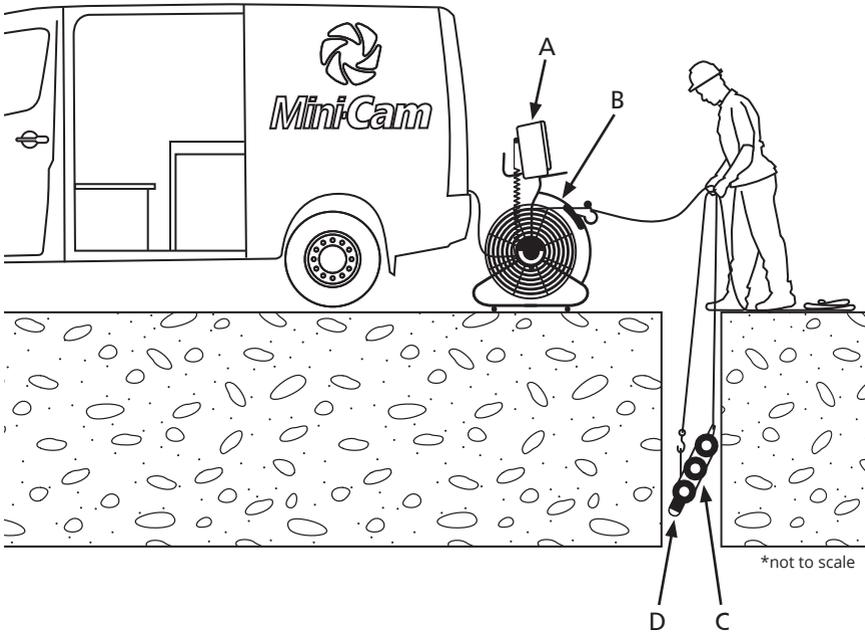
InPipe GmbH
Jägerwinkel 1a,
6991 Riezlern,
Austria

System Overview

The Proteus™ Lite inspection system consists of the following main components:

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

A typical configuration is shown in this illustration:



Warnings, Safety Measures and Care

Please read the safety measures closely and observe them. They preserve your own safety, the safety of co-workers as well as the prevention of damage to the Proteus™ Lite inspection system and its components.



CAUTION!

The operator of the Proteus™ Lite inspection system must be trained by either Minicam or one of its authorised representatives before using the system.



CAUTION!

Despite all of the safety functions built into the system, the operator is not exonerated in any way from his/her duty of care. Thus the user alone is responsible for any damage caused as a result of misuse.



CAUTION!

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



DANGER!

Risk of deadly injuries from electrical current!

The mains plug and or IEC connector of the PSU is the supply isolation device and must be easily accessible.



DANGER!

Risk of deadly injuries from electrical current!

- The power supply for the crawler can generate a high voltage which can be considered hazardous, however this supply cannot be switched on unless all parts of the system are connected. Consequently this supply is not accessible, and as soon as any connection is exposed or disconnected the power supply will automatically shut off.
- This hazardous voltage may be exposed if the control unit, cable reel or crawler is opened while the system is operational. Therefore the modules of the system should only be opened by a Minicam Service Centre.

- There are no user serviceable components within any module in the system.



DANGER!

Risk of deadly injuries from electrical current!

Only use an appropriately rated and approved cord set in accordance with the regulation of the country in which this system is used.



DANGER!

Risk of deadly injuries from electrical current!

Although the cable reel and crawler could be used in wet environments the external PSU is for indoor use only (as marked on its label) and must not be used in wet areas.



DANGER!

Risk of deadly injuries from electrical current!

Only the power supply supplied as part of the Proteus™ inspection system can be used and should NOT be replaced by any other.

Before first use

Please notice the following sources of risk for serious or deadly injuries:



CAUTION!

Risk of deadly injuries from electrical current!

- Ensure that no fluids can enter the control panel or penetrate the housing of the cable reel. In case this happens, immediately disconnect the power supply and inform the appropriately trained staff or Minicam Service Centre.
- Ensure that the electrical connection cables are intact and that they cannot be bent or crushed. If you find cable damage, immediately disconnect the power supply and inform the appropriately trained staff or Minicam Service Centre.
- Work on the electronics, which are not covered in this document, shall only be carried out by trained specialist staff or a Minicam Service Centre.
- Maintenance and repair work, which is not covered in this document, shall only be carried out by trained specialist staff at a Minicam Service Centre.



CAUTION!

Risk of serious injuries by falling crawler!

When preparing the system for operation pay attention to the crawler position, that it is not too close to the manhole. When testing the driving function, the crawler might fall into the manhole. Any person in the manhole may suffer serious injuries.



CAUTION!

Hazard of infection and contamination of fresh water!

Never alternate the use of the inspection system for inspections in wastewater and freshwater! Even a thorough cleaning of the system will not ensure sufficient protection against contamination. For inspections in wastewater and freshwater use a separate inspection system for each. Bacteria can lead to an infection. All individuals employed for the work must be advised of the hazards and must be instructed in the required safety measures.



CAUTION!

Explosion hazard!

Do not use the inspection system in pipelines which might have contained explosive substances, such as gas or solvents. If this kind of application should be required, contact Minicam to obtain information on system components destined for this purpose.



CAUTION!

Suffocation hazard!

Before and while lowering the crawler into the pipe system it is necessary to perform a safety test with a certified gas detector.

Safety Measures

The staff assigned to tasks involving the Proteus™ Lite inspection system must have read and understood this user manual completely before the start of the work. This applies equally to the staff who only work on the inspection system infrequently, e.g. for maintenance, repair or retrofitting work.



NOTE!

The operator of this inspection system is obliged to ensure a safe and hazard-free operation. This may be achieved by the following measures:

- Making the user manual available on the site of the use of the inspection system at all times.
- Check lists for maintenance and care.
- Regular reviews of the safety and hazard conditions



NOTE!

Safety of persons!

The staff for operation, maintenance and upgrading must have specialist expertise or be instructed by competent individuals. Competent individuals must have adequate knowledge of the Proteus™ Lite inspectionsystem based on technical training and experience. They must be familiar with the relevant work safety regulations and accident prevention rules to an extent that they are capable of judging the inspection system operational safety.

They must:

- Observe the operating manual for the workplace.
- Observe the relevant work safety regulations and accident prevention rules.
- Seek instruction for the handling of hazardous substances.
- Adhere to the safety information described in this user manual.
- The operator must wear safety equipment that is appropriate to the survey being performed (such as goggles, gloves, safety shoes, etc).



NOTE!

Avoid physical damage!

The operator of the Proteus™ Lite inspection system is responsible for the following aspects:

- Only use the inspection system for work that is appropriate to the specifications
- Observe the operational requirements for this inspection system as described in this user manual.
- Keep the system clean. Observe the individual cleaning instructions for this purpose.

Maintenance

To ensure the maximum service life of the Proteus™ Lite inspection system the individual modules and accessories belonging to the system have to be independently maintained and kept clean. Moving parts, in particular, can have improved operational life by frequent professional cleaning after inspections. Also, the risk to the operator of infection can be significantly reduced by using a cleaned system.

Take notice of the following comments on general maintenance:

- Keep the entire system clean and clean the system directly after each inspection.
- Thoroughly wash down the parts of the system that have come into contact with moisture and then dry them with a clean and dry cloth.
- Keep all electrical connections and contacts free of dirt, grease and moisture at all times.
- bend the cable of the system and avoid knots.
- Clean the cable with a rag when retracting.
- Regularly grease all exposed O-rings using O-ring lubricant as required in the maintenance instruction.
- Use only suitable display cleaners for cleaning the display as required in the maintenance instruction.
- Use only clean and dust free cloths for cleaning the display.
- Use water for cleaning without the addition of cleaning agents or solvents.

For detailed maintenance instructions for individual modules and accessories please read the comments in the description for each module. The specific maintenance work steps will also be explained.



NOTE!

The operator of the system is responsible for the proper disposal! See information on page 109 on the return of equipment at the end of the useful life.

Cleaning

To minimise down time and subsequent repairs it is necessary to keep your Proteus™ inspection system clean. Please follow the instructions below to help avoid disruption.



CAUTION!

Risk of fatal injuries caused by electrical current!

Ensure that no fluids can enter the control panel or penetrate the housing of the cable reel. If this happens, immediately disconnect the power supply and inform the Minicam Service Centre.



CAUTION!

Risk of fatal injuries caused by electrical current!

For all cleaning and maintenance work disconnect the system from the power supply.

General cleaning work



CAUTION!

High-pressure cleaners must not be used. It can cause considerable damage to the crawler, camera and other system components.

Cleaning agents or solvents must not be used. These can damage the seals and other materials on the system.

Only clean water should be used.

- Clean the crawler and camera with water after the first inspection. Only after this should you loosen electrical connections.
- Immediately fit the protective caps after removing electrical connections.
- Check O-rings for damage and replace if necessary and grease regularly with O-ring lubricant.
- Clean the cable reel and control unit with a damp cloth.
- Only clean the camera and light lenses with a specific lens cleaning cloth to prevent scratches.

Checking Plug and Socket Connections

To ensure reliable operation it is important that the electrical connections are not damaged and are kept clean and dry. It is important to check before and after each use of the inspection system.

- Check the contacts on the camera back plate.
- Check the contacts on the crawler camera connector (with care).
- Check the contacts on the crawler cable connector.
- Check the contacts on the cable reel connector.
- Check the contacts on the control unit.
- Check the contacts on the auxiliary module.

Clean dirt and moisture from the pins and connectors using an electronic contact cleaner aerosol.



NOTE!

- Disconnect the power supply from the system.
- Check the O-rings for damage and replace if necessary.
- Grease the O-rings if necessary using O-ring lubricant.



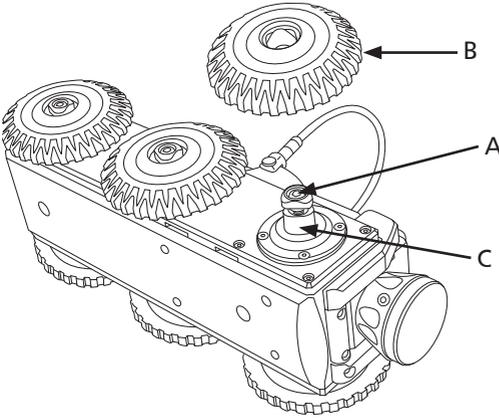
IMPORTANT!

KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.

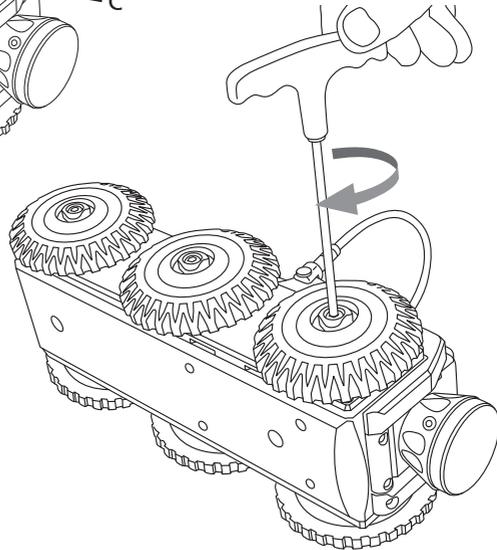
Connecting the Proteus™ Lite System

Fitting and removal of crawler wheels

- 1 Ensure the quick release wheel retainer (A) is aligned with the axle (C).
- 2 Slide wheel (B) on to the crawler axle (C).



- 3 Turn the wheel retainer bolt clockwise to lock the wheel onto the axle.



NOTE!

To remove the wheel turn the retainers bolt anti-clockwise, ensure that the retainer is aligned with the wheel axle, and slide the wheel off the crawler axle.

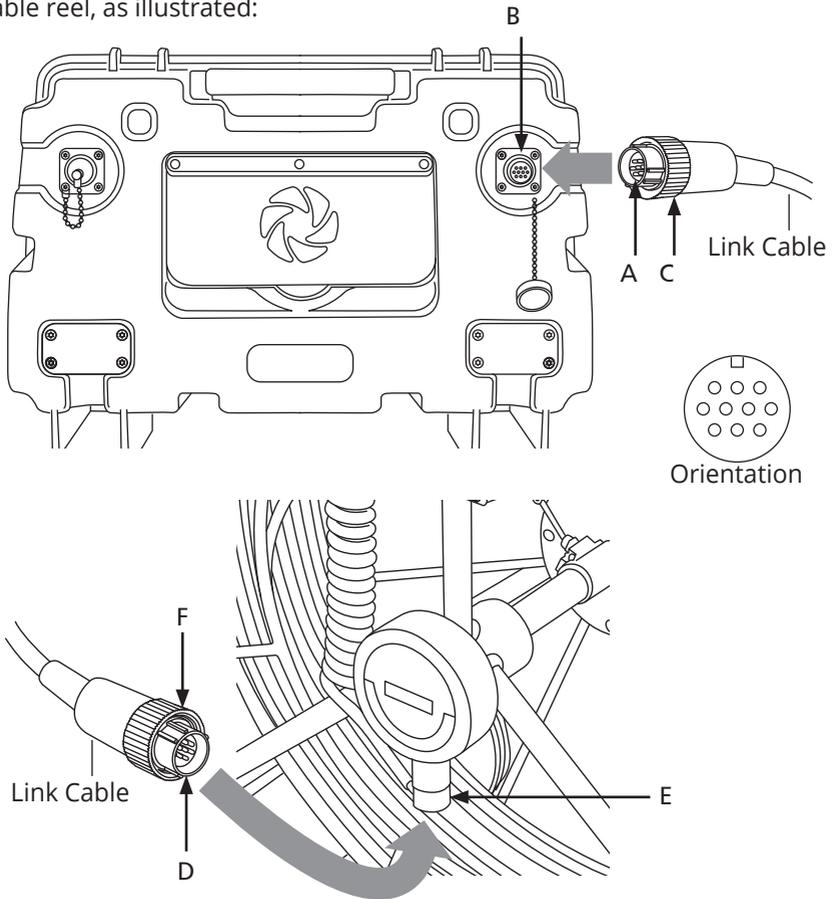


NOTE!

The fitting and removal of wheels is exactly the same procedure for all Proteus™ crawlers. The illustration above shows the CPL150.

Connection of Cabling between Control Unit and Cable Reel

Connect the link cable to the back of the control unit and to the side of the cable reel, as illustrated:



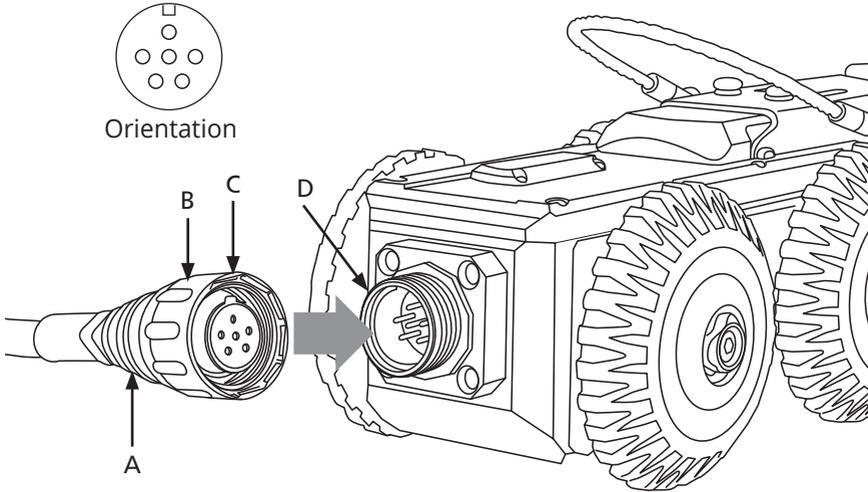
- 1 Plug the male plug (A) of the link cable into the back of the control unit (B). Notice the orientation of the plugs. Secure in place with locking ring (C).
- 2 Plug the female plug (D) of the link cable into the side of the cable reel (E). Notice the orientation of the plugs. Secure in place with locking ring (F).



NOTE! To remove the connectors turn the retaining ring anti-clockwise.

Connection of Cabling between Cable Reel and Crawler

Connect the cable reel cable to the back of the crawler as illustrated:



- 1 Plug the cable end connector (A) into the crawler connector (D). Notice the orientation of the socket (C).
- 2 Turn the retaining ring (B) clockwise, as viewed from the cable, to lock the cable end connector into the socket (D). The retaining ring is not able to unscrew itself during use if cleaned and maintained correctly.



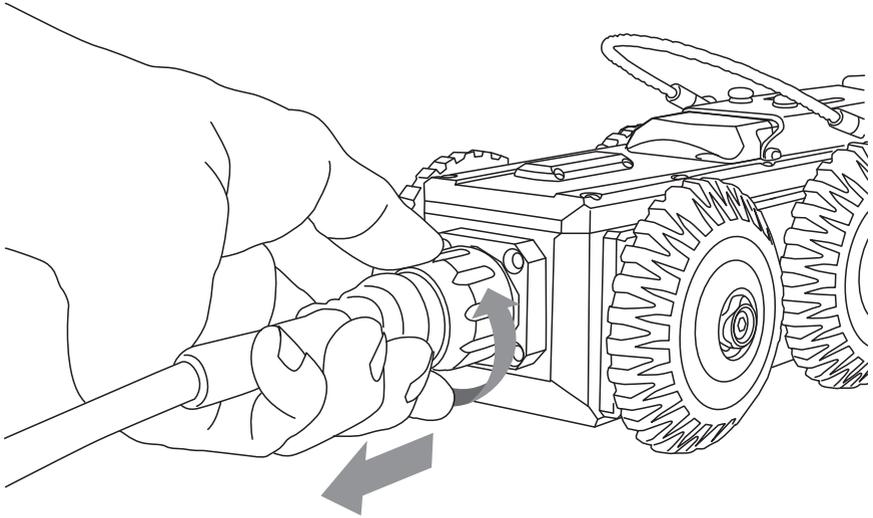
IMPORTANT!

KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.

Disconnecting Cabling between Cable Reel and Crawler

Disconnect the cable reel cable from the back of the crawler as illustrated:

- 1 To unscrew the retaining ring you must pull the ring away from the crawler body before rotating anti-clockwise.



NOTE!

Always fit the protective caps when the crawler, camera or auxiliary module are not in use to protect from damage, ingress of dirt and moisture.

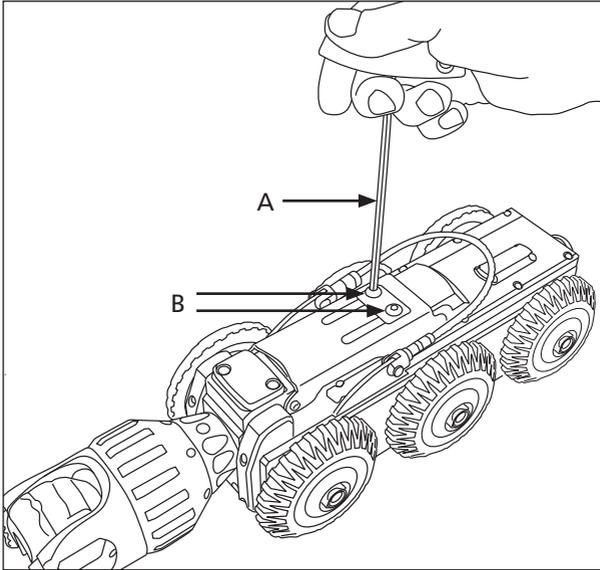


IMPORTANT!

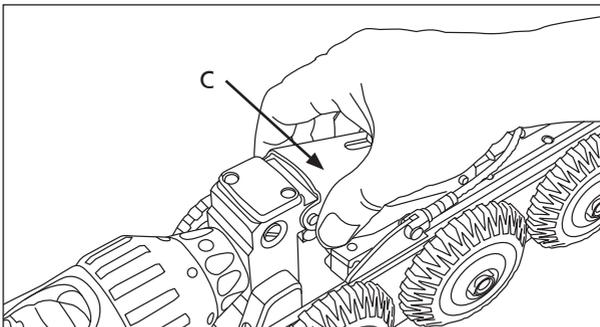
KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.

Manual Elevator

The CPL150 Proteus crawler features a manual quick release elevator to enable adjustment of the camera height position.



- 1 Use a 4mm Allen Key (A) to loosen the two hex bolts (B).



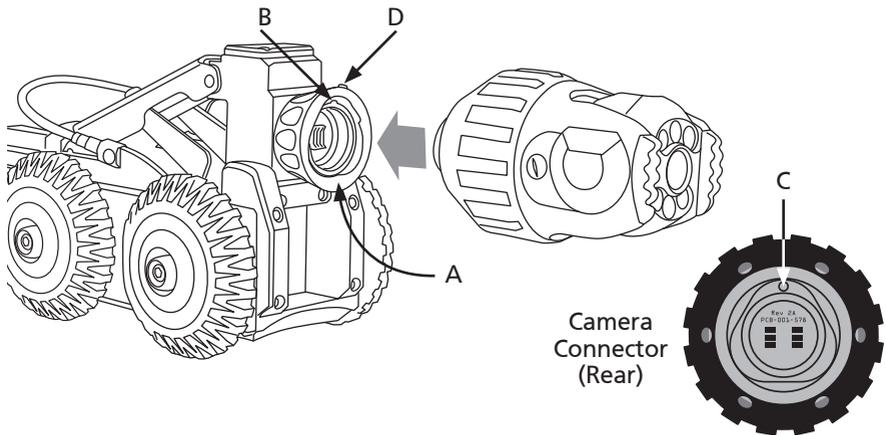
- 2 Grip the elevator arm (C) firmly and pull upwards to the required height position. Secure the elevator using the 4mm Allen Key to tighten the hex bolts.

Connection of Camera to Crawler

NOTE!

Ensure that power to the crawler is switched OFF before connecting or disconnecting the camera by using the ALL-STOP button on the CCU. A red light will illuminate next to this button when power to the crawler is OFF.

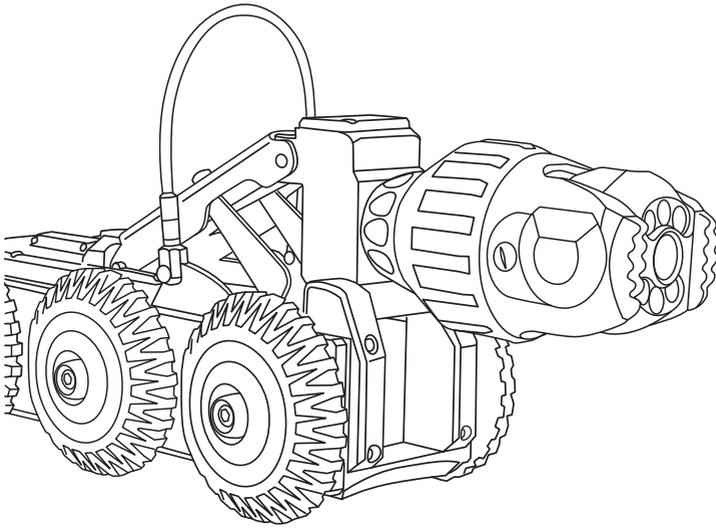
Connect the camera to the crawler as illustrated:



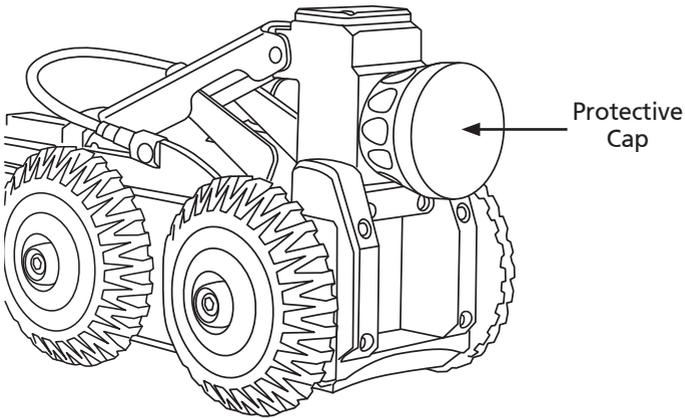
- 1 Ensure the connections are free of debris, dirt and moisture.
- 2 Ensure the locking ring (A) is rotated fully clockwise, as viewed in the diagram, with the locking hole (B) in the 12 o'clock position.
- 3 Notice the orientation of the locking pin (C) on the rear of the camera. Fit the camera to the crawler, aligning the pin into the hole.
- 4 Turn the retaining ring (A) anti-clockwise, as viewed in the diagram, to lock the camera onto the crawler.
- 5 Turn the grub screw (D) to lock the retaining ring in position using 3mm Allen Key. **DO NOT OVER TIGHTEN!**
- 6 Removal is the opposite of fitting.

NOTE!

Grub screw has a mushroom head and cannot be fully removed. **DO NOT OVER TIGHTEN!**



Proteus CPL150 Crawler with CAM026 Pan & Rotate Camera attached (see page 29 for instructions).



NOTE!

Always fit the protective caps when the camera is not in use to protect from damage, ingress of dirt and moisture.

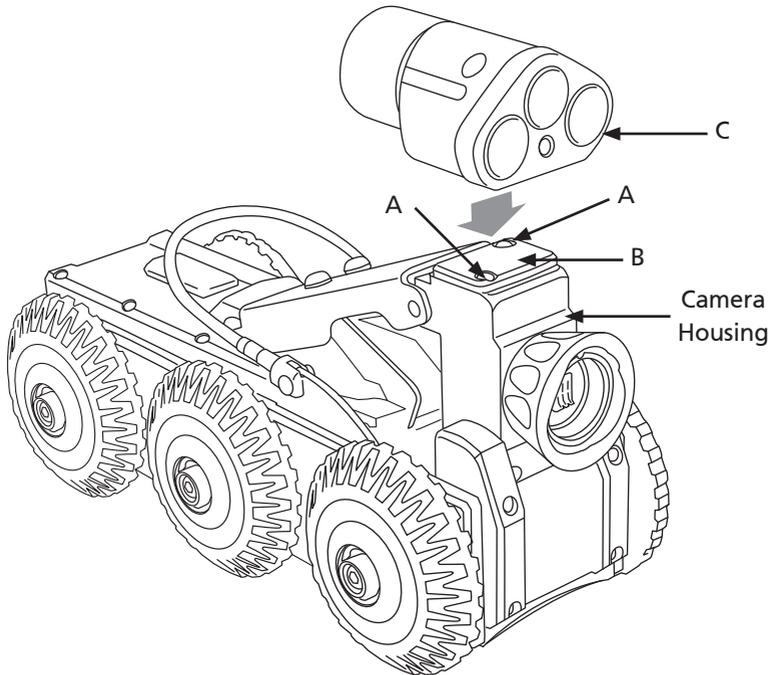
Connection of Auxiliary Module to Crawler



NOTE!

Ensure that power to the crawler is switched OFF before connecting or disconnecting the auxiliary module by using the ALL-STOP button on the CCU. A red light will illuminate next to this button when power to the crawler is OFF.

Connect the auxiliary module, ALB300, to the crawler as illustrated:



- 1 Remove the protective cap screws (A)
- 2 Remove protective cap (B)
- 3 Fit the auxiliary module (C) to crawler. Notice the orientation as shown in the diagram
- 4 Fasten 2 x M4 x 45mm screws with 2 x M4 anti-vibration washers to fix the auxiliary module (B) onto the camera housing.



NOTE!

Always fit the protective caps when the crawler, camera or auxiliary module are not in use to protect from ingress of dirt and moisture.

Pressurising the Proteus™ Lite inspection system

Before use it may be necessary to pressurise the crawler (see page 33) and camera (see page 69). The pressure within each of the modules must be checked before the inspection begins.



NOTE!

The internal pressure of each pressurised module may vary. Refer to the specific module technical specification for correct pressure information. The control unit displays the internal pressure reading for each of the pressurised modules when the system power is ON.



CAUTION!

Use a pressure reducing valve when pressuring a module. Never attempt to connect the gas bottle directly to a system module.



IMPORTANT!

KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.

Instructions for Pressurising the CPL150 Crawler

- 1 Connect the Proteus™ Lite inspection system and apply power.
- 2 Unscrew the pressure valve protection cap (A) and screw on the pressure valve connection adaptor (B).
- 3 Set the pressure regulator for the CO₂ or Nitrogen to 10 PSI.
- 4 Ensure the crawler pressure is within the acceptable range by checking the pressure gauge on the control unit. An example is shown below.
Refer to the CCU section of this manual on specific instructions on how to access the pressure gauges.
- 5 Remove the pressure valve connection adaptor (B).
- 6 Refit the pressure valve protection cap (A).

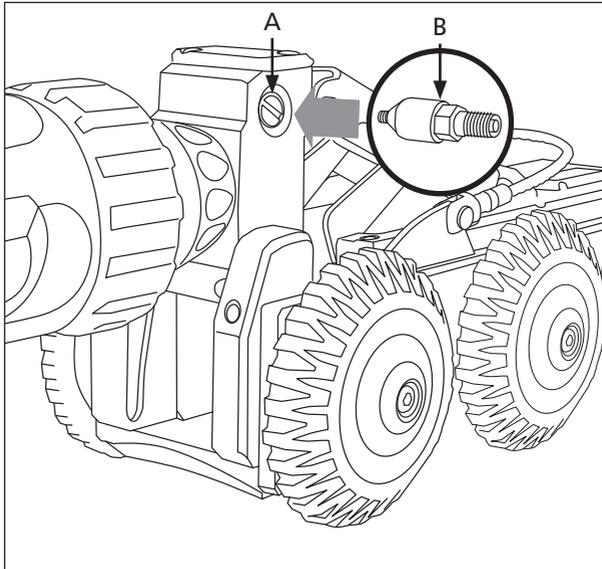


Image shows an example of the control unit crawler pressure gauge:

Testing the system

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



CAUTION!

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.



CAUTION!

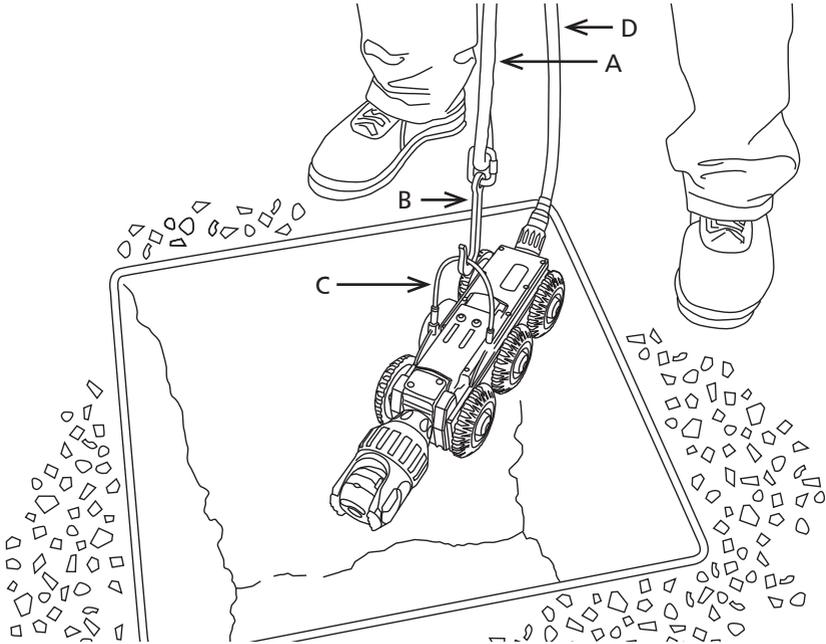
Risk of disorientation and temporary blindness!

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:
 - i Drive forwards and backwards.
 - ii Steer left and right.
- 2 Control function of the camera using the right joystick (If Pan and Rotate camera head):
 - i Rotation left and right.
 - ii Pan up and down.
- 3 Lighting control of camera head and auxiliary module (if fitted):
 - i Turn the light intensity up and down.
- 4 Check function of the rear view camera and rear lights (if auxiliary module is fitted):
 - i Press the Backeye button. Camera view will change to rear view.
 - ii Turn the light intensity up and down.
 - iii Press the Backeye button again. Camera view will revert to forward view.

Lowering the Crawler into the Manhole



- 1 Position the crawler over the invert of the chamber using the lowering rope (A) with hook (B) on the lowering handle (C).
- 2 Balance the crawler by means of the crawler cable (D) so that it does not contact the chamber. Carefully lower the crawler into the invert of the chamber.
- 3 Detach the hook (B) from the crawler lowering handle (C).



NOTE!

To retrieve the crawler from the chamber use the lowering rope (A) and hook (B) to attach to the crawler lowering handle (C). Lift the crawler out of the chamber, balancing the crawler by using the crawler cable (D).

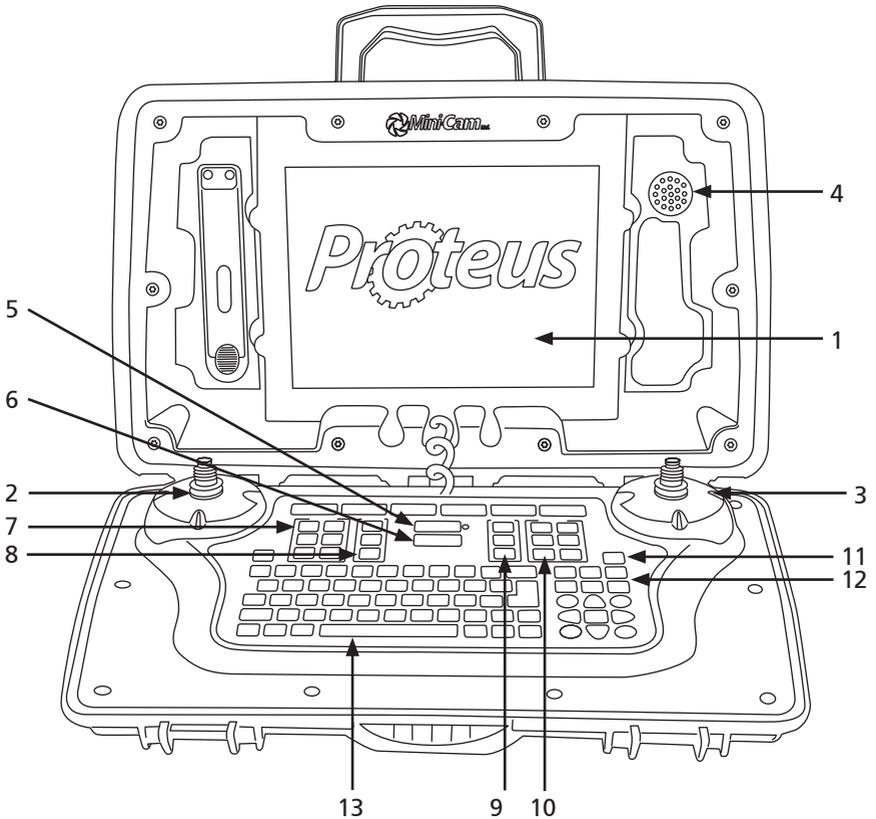
CCU208 - Control Unit

The Proteus™ control unit CCU208 is a robust and portable control unit for the Proteus™ Lite system. It controls the functions and reports the status of the attached modules. It has the following features:

- Scalable internal solid state storage (32GB minimum)
- Data transfer via USB and SD card
- Sunlight viewable display (1024x768 pixels)
- Video recording in MPEG-4 AVC/H.264 formats
- Pictures saved in JPG format
- Customisable colour on screen text overlay
- Video output of live video with on-screen text
- Ergonomic design
- IP54 rated

The control unit CCU208 enables the operator to record video and photographic surveys, generate survey reports, and export the data via USB or SD card. The control unit can generate on screen text that is overlaid onto the recorded video in various colours and positions, allowing easy customisation.

CCU Overview



1 Daylight viewable screen 1024 x 768 pixels

2 Left joystick for crawler control

3 Right joystick for camera control

4 Speaker

5 ON/OFF button

6 ALL STOP button

7 Crawler function keys

8 Survey Function keys

9 Media function keys

10 Camera function keys

11 Snapshot key

12 Recording and playback keys

13 Keyboard

ON/OFF button



Used to turn the control unit ON and OFF. This button does not enable power to the crawler. By design, the control unit will power on but power is not automatically applied to the crawler. A green light next to this button indicates that the CCU is powered on.

ALL STOP button



Used to enable / disable power to the crawler. When power to the crawler is disabled a red light next to this button is illuminated.

- When the control unit is powered ON this key must be pressed to enable power to the crawler.
- When the crawler is powered ON, pressing this key will disable power to the crawler.
- The ALL STOP button can be used in case of emergency, to stop the crawler and disable the power



NOTE!

The ALL STOP button must be pressed to disable the power to the crawler before disconnecting any part of the system.

Power ON sequence

- 1 With the system power OFF, connect all system components: Cable reel, crawler, camera
- 2 Press ON/OFF button to power the control unit ON.
- 3 Read and acknowledge the on-screen prompt.
- 4 Press the ALL STOP button.
- 5 If the control unit detects a crawler connected, the system will fully power up. The red light next to the ALL STOP button will turn off. Video will be displayed and crawler/camera status information will be displayed on the right hand side of the screen.



NOTE!

If the control unit does not detect a crawler connected, the system will not fully power up. The control unit will sound an audible beep several times and the red light next to the ALL STOP button will be illuminated. If this should happen, first check all connections on the system are made correctly. If the problem persists then contact the Minicam Service Centre or Minicam Partner in your country.



NOTE!

Details of the nearest Minicam Service Centre and Accredited Minicam Partners world-wide are made available on the website www.minicam.co.uk

Power OFF sequence

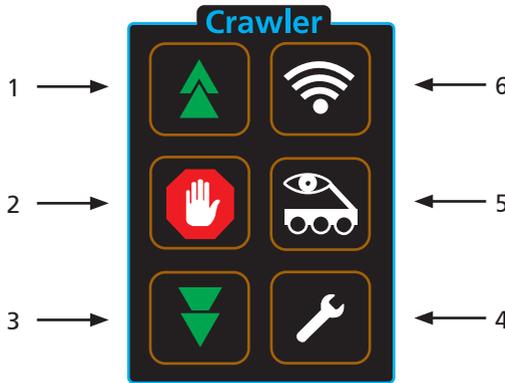
- 1 Press the ALL STOP button. The red light next to this button will illuminate.
- 2 Press the ON/OFF button and press OK to confirm.
- 3 The control unit will now power down.
- 4 The system can now be disconnected.



NOTE!

Always fit the protective caps when the crawler, camera or auxiliary module is not in use to protect from ingress of dirt and moisture.

Crawler function keys



1 Cruise control - Forward

- a Each press increases speed until maximum speed is reached.
- b When the crawler is reversing, each press slows the crawler speed.

2 Stop

- a Crawler stops moving. Power is still enabled.

3 Cruise control - Reverse

- a Each press increases speed in reverse until maximum speed is reached.
- b When the crawler is travelling forward each press slows the crawler speed.

4 Crawler settings

- a Select the correct wheel size attached to the crawler for accurate speed display.
- b Inclination (*if purchased-optional*)

5 Backeye

- a Switch between forward and rear view cameras.

6 Sonde

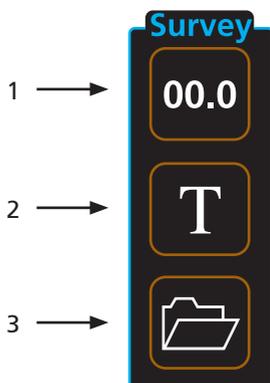
- a Enable or disable sonde function (*if purchased-optional*).
- b Choose transmission frequency.



NOTE!

Moving the crawler joystick during Cruise mode will cancel the cruise control function. The operator will now have manual control.

Survey function keys



1 Meterage

- a Change meterage manually.
- b Change position of meterage on the screen

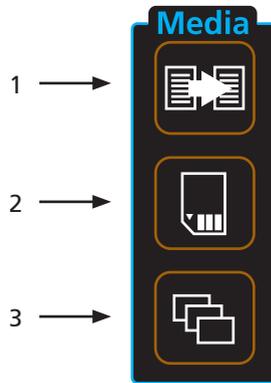
2 Text

- a Change text colour

3 Survey Folder

- a Start *ProPIPE+* or *WinCan* survey.

Media function keys



1 Copy

- a Copy files from one media source to another

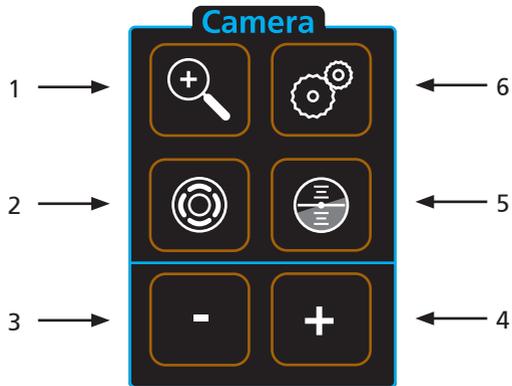
2 Storage media

- a Choose storage media - Internal/USB/SD card

3 Gallery

- a Browse surveys, videos and pictures

Camera function keys



- 1 Digital Zoom
- 2 Camera Illumination
- 3 Focus-
- 4 Focus+
- 5 Camera Home
 - a Automatically move camera to home position (CAM026 only)
- 6 Camera Settings

Snapshot key

Press this key to take a JPG image of the live video or video during playback



Recording and Playback keys

These keys control the recording and playback of video files



QWERTY keys

These keys allow the user to enter text for on screen text or survey comments

Pressurising Operation Mode

The pressurisation operations of the CCU and the inspection equipment are only active when the inspection equipment is powered on.

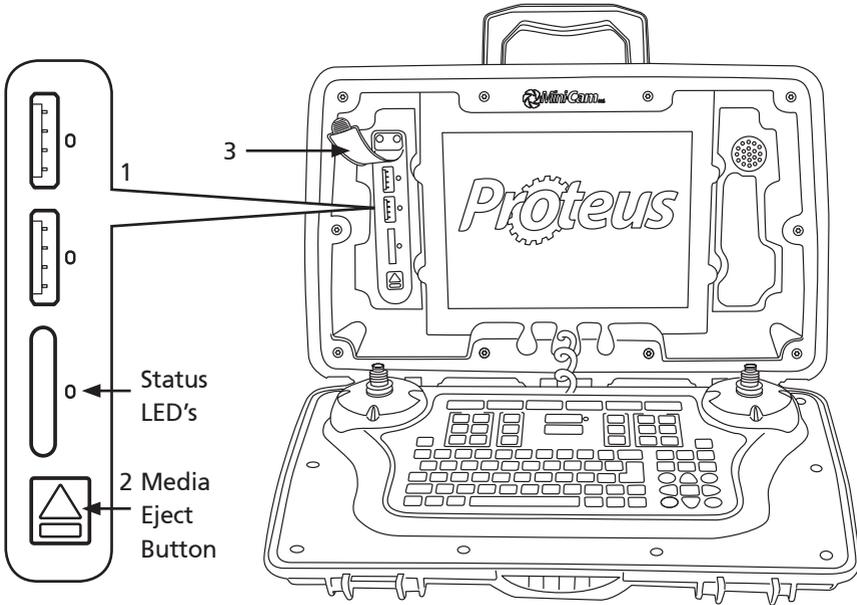
During Pressurising Operation Mode the CCU monitors and displays an indication of the inspection equipment pressure, allowing the user to pressurise the inspection equipment.

To access the Pressurisation Operation Mode press the HELP key and select the module you want to pressurise.



Image shows an example screen shot for the camera

Connections and Descriptions



Front view

1 External media – USB and SD card slots

a External media status LED's.

- Blue – Media is plugged in but is not in use.
- Orange blinking – Media is currently selected and in use.
- Green – Media is safe to remove from the control unit.
- Red – Media is plugged in but is faulty.

2 External media eject button

- ##### a Press this button for 1 second and release. This will instruct the control unit that you wish to unmount the external storage media. When the LED status indicators are green it is safe to remove the media.

3 External media protection cover

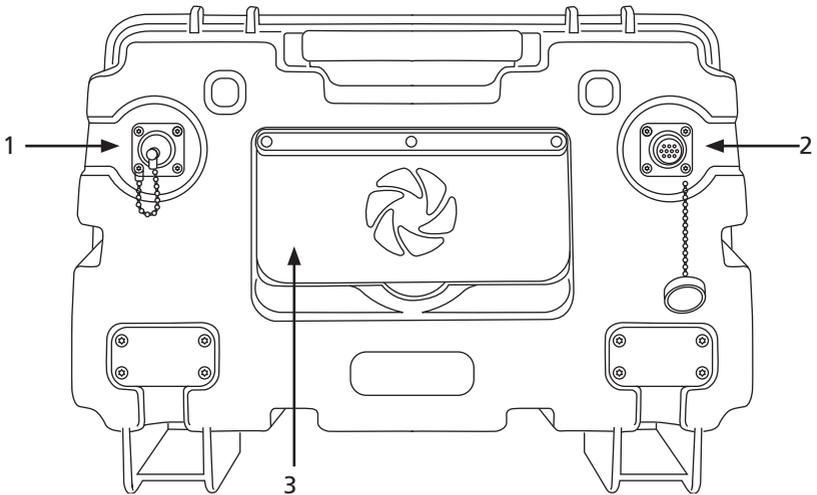
- ##### a To protect the connectors from dirt and moisture.



NOTE!

Always fit the external media protection cover (3) into position to protect from ingress of dirt and moisture.

Rear view



1 External Power Input (24VDC)

- a This provides power for the crawler and charges the control unit internal battery.

2 Connection to Cable Reel

3 Expansion Slot Protection Cover

- a To protect the expansion slot from ingress of dirt and moisture.



NOTE!

Always fit the expansion slot protection cover (3) into position to protect from ingress of dirt and moisture.

WiFi Module

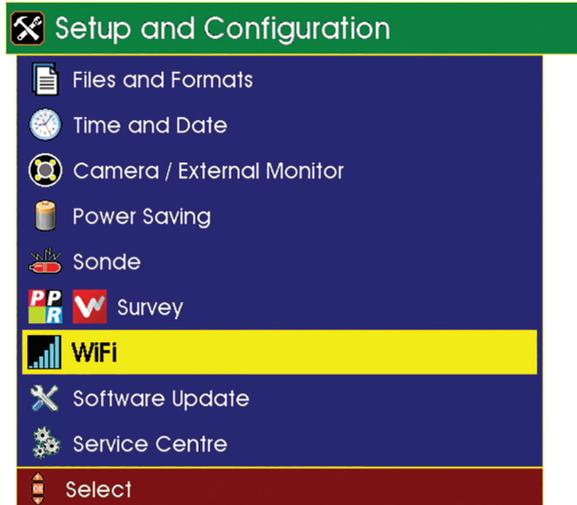


Your Proteus™ Lite system is enabled with a WiFi module to connect your CCU to a local company network, to allow an easy file transfer between the system and your office or local computer. It improves the speed of reporting without the need of exchanging SD cards or USB sticks.

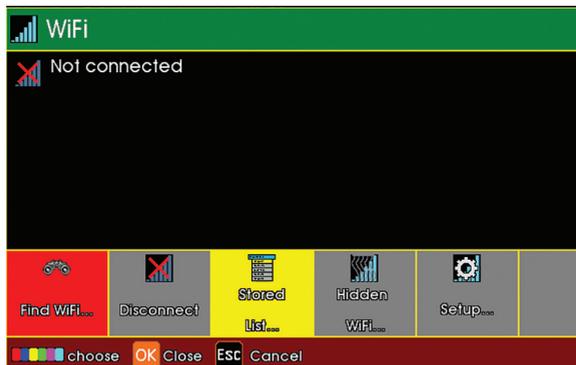
Using WiFi

This feature allows the user to connect the CCU to WiFi.

- 1 Select WiFi from the Setup and Configuration drop-down menu.



- 2 A menu will be displayed giving options to connect to WiFi.



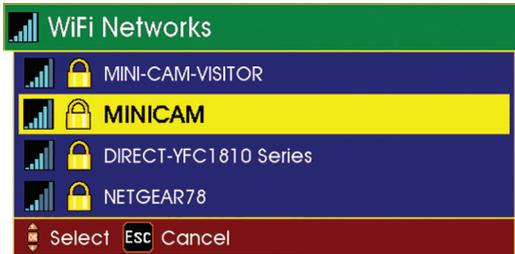
- 3 Select Stored F3 (Yellow Key) to view stored network URLs (addresses).



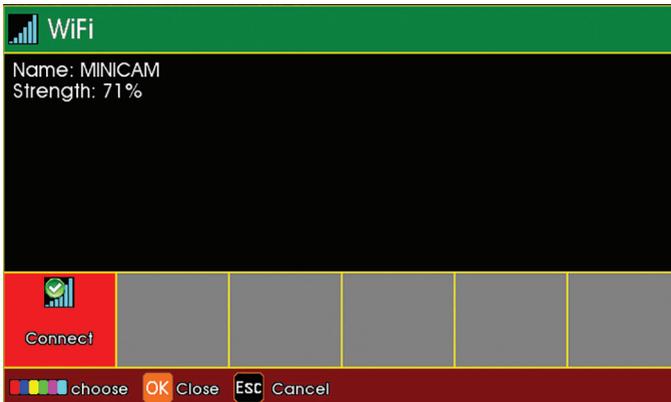
4 Select Find WiFi... F1 (Red Key) to search for available networks.



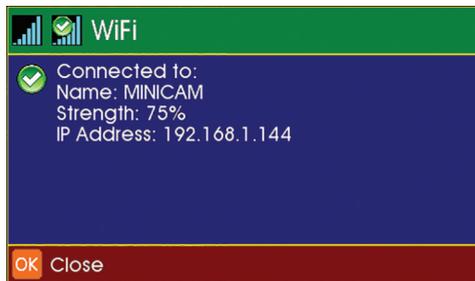
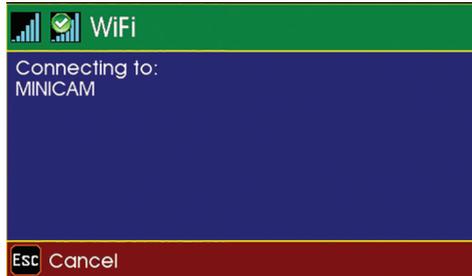
5 Select the required network from the menu.



6 Select Connect F1 (Red Key) to connect to the selected network (you will have to type a WiFi password in if required).



- 7 Status screens will display the connection progress, followed by connection confirmation, signal strength and IP Address.



- 8 The main display screen shows the WiFi status icon at the bottom right-hand side of the sidebar.

WiFi NOT CONNECTED
Red cross indicates no
signal

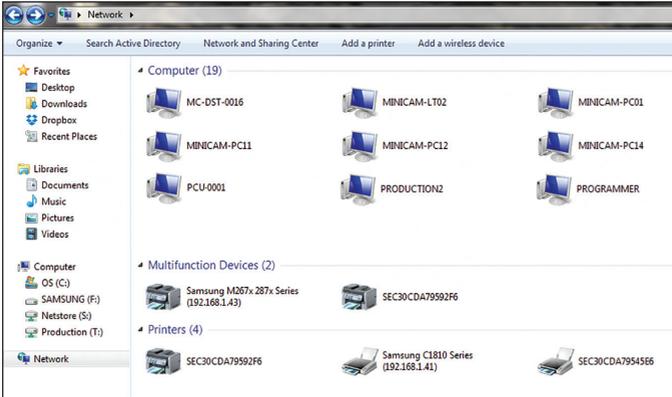


WiFi CONNECTED
Vertical blue coloured bars
indicate signal strength

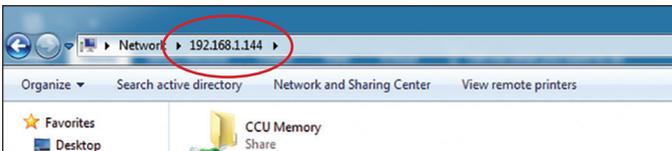


Connecting to your PC

Using Explorer in Windows® OS, the CCU may appear under the Network Neighbourhood. You can access your files directly.



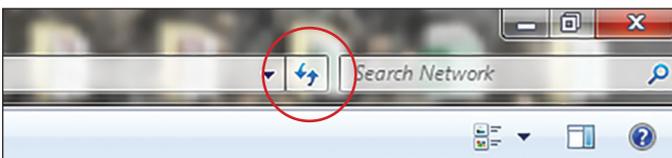
Alternatively, use the search bar in Explorer by typing \\ followed by the IP Address shown on your Proteus (Example - \\192.168.1.144)



This will then connect you to your Proteus control unit which will display a folder named CCU Memory. Double click on this folder to access all files currently on that control unit. You then can open any file to view video footage or still images and ProPIPE Reports, or alternatively you can save them onto your PC.



NOTE: If the CCU is not displayed after the first search, try searching again by hitting the Refresh button on the menu bar



File Sharing

 **NOTE:** To share the files over email or WincanWeb internet access is needed. Please connect to a Wifi with an internet connection before sharing files.

Email

- 1 Use the Gallery Browser  to select a file to be sent.
- 2 Navigate to the desired file, press OK and select the Share  option. The Email option is only available for a single file, directories cannot be sent by email.
- 3 From the menu select the Email option. A text box with all the necessary data inputs fields will be displayed.
- 4 Enter Address, CC Address, Subject and Body text then press OK. The CCU will start the sending process. A message will be displayed with the sending progress, which will display Sent when the email has been dispatched.

 **NOTE:** The most recent Address, CC Address and Subject are stored over the power cycle.

 **NOTE:** The file to be shared over the email cannot exceed 10MB

Wincan Web

If the user has a WincanWeb account he can use it to upload Wincan Embedded projects.

- 1 Use the Gallery Browser  to select a WinCan project to be sent.
- 2 Navigate to a WinCan project, press OK.
- 3 Select the Share  option.
- 4 From the menu select the WincanWeb option. A text box with all the necessary data inputs fields will be displayed.
- 5 Enter Login and Password, then press OK. The WinCanWeb will start the sending process. A message will be displayed with the sending progress, which will display Sent when the upload has finished.



NOTE: To share using WincanWeb, WinCan catalogues must be installed on the CCU.



NOTE: Login and password are stored over the power down.

Share Status

The user can clear the status window displayed after the share process has been started and an appropriate form filled, without interrupting file sharing.

The share icon  will be visible in the right bottom corner until the Email or WincanWeb has finished sending. The progress can be also seen in the **Share Status**

which can be accessed after pressing Gallery Brows  . It will also inform

the user in the case of a sending failure, which may happen if the internet connection has been interrupted or services are temporarily unavailable.



NOTE: To successfully share files, the CCU needs to remain on and connected to the internet until the sharing has finished.

Information and Care

Cleaning

Ensure that the control unit is thoroughly cleaned after each inspection. Use a damp rag when cleaning. Ensure the connectors are free from dirt and moisture. Always fit the dust caps immediately after disconnecting the control unit from the rest of the system.

Maintenance

Ensure that all screw threads and connections are free from dirt.



CAUTION!

High-pressure cleaners must not be used. It can cause considerable damage to the control unit, crawler, camera and other system components.

Cleaning agents or solvents must not be used. These can damage the seals and other materials on the system.

Only clean water should be used.



CAUTION!

The control unit is rated to IP54 providing that the external media and expansion slot covers are fitted in place.



CAUTION!

It must be noted that although the cable reel and crawler are for use in wet environments the control unit is for indoor use but may also be used outdoor in very light rain. The external PSU is for indoor use only as marked on its label.

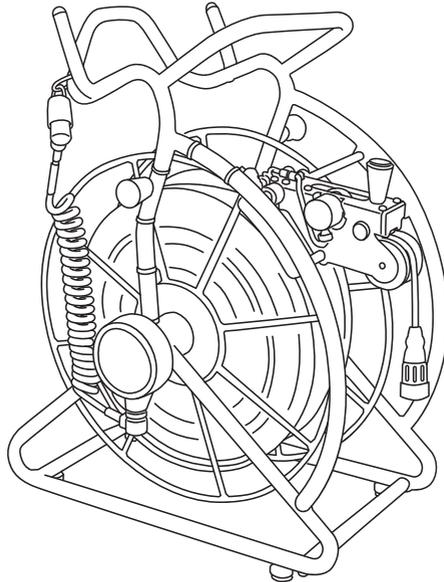
Technical Details - CCU208

Product ID:	CCU208
Dimensions:	430 x 280 x 150mm (L x W x D)
Power Consumption:	30W (standalone)
Weight:	5.5Kg (12.12lb)
Temperature Range:	-10°C ~ +40° C
Environmental Protection:	IP54
Charging Time	11 Hours (Maximum)

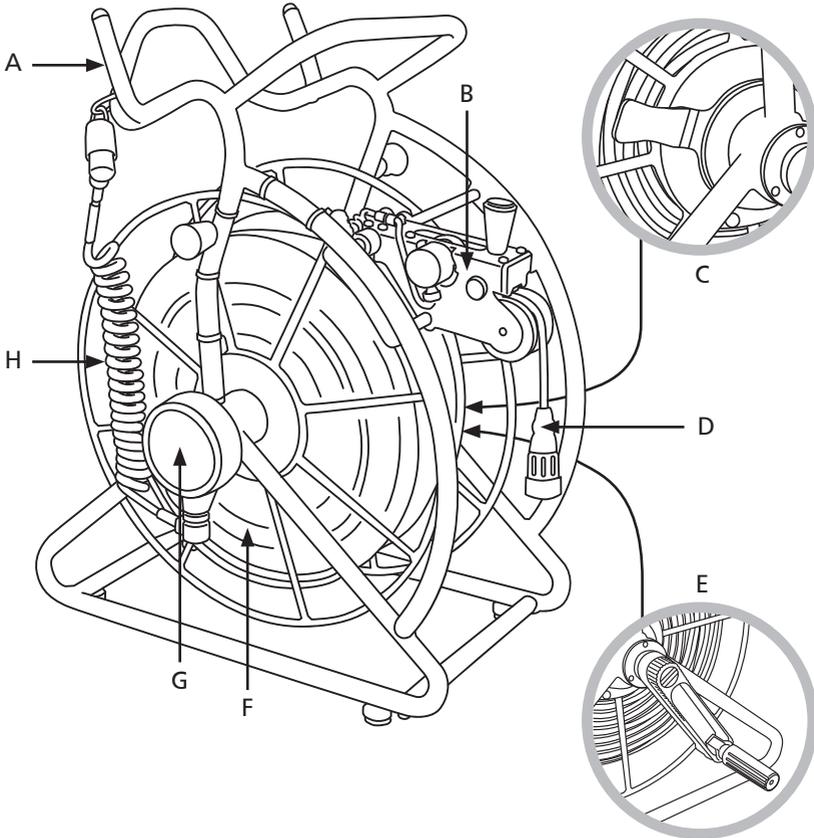
RMPL250 - Cable Reel

The RMPL250 reel is a robust and portable unit which houses the cable reel and CCU. It has the following features:

- Unique cow-horn locators for easy fitting of the CCU
- Meterage Roller
- 250m *Kevlar* reinforced cable
- Friction brake
- Fold-away/Removable handle
- Spring loaded connector
- Link Cable
- Powder coated tubular frame with rubber feet



Connections and Descriptions

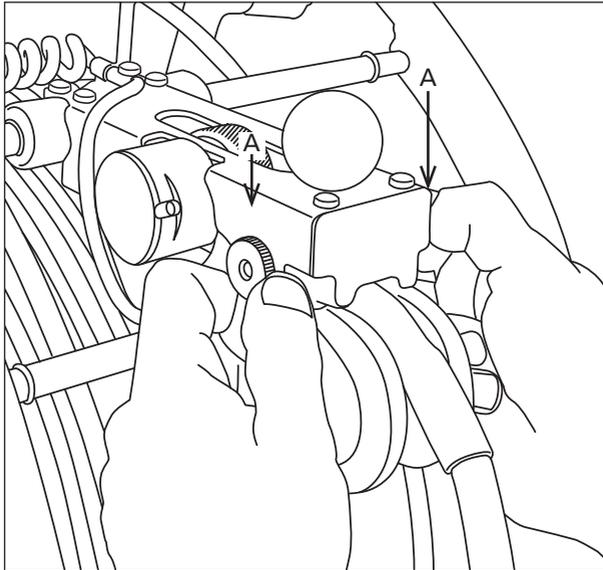


- A Cow-horn locators for CCU
- B Cable layering arm/Meterage wheel
- C Friction brake
- D Spring loaded connector
- E Fold-away winding handle
- F 250m 6.8mm *Kevlar* reinforced cable
- G Interface box
- H Link cable

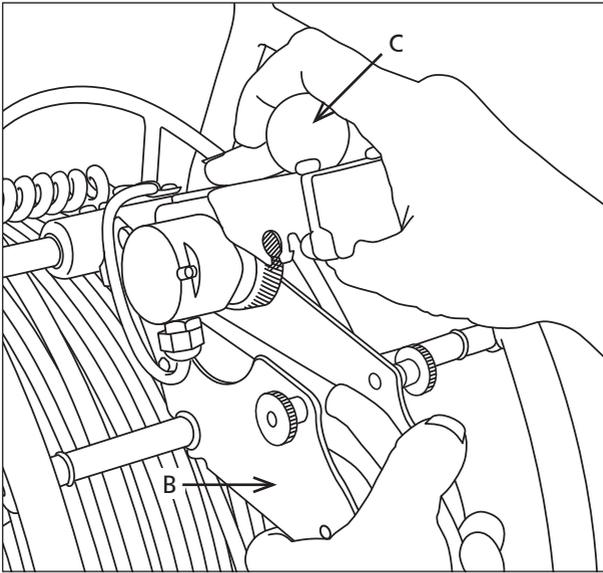
Cable Layering Arm

The RMPL250 features a manual cable layering arm which ensures smooth, uninterrupted, tangle-free pay-out and rewinding of the 250 metres of 6.8mm *Kevlar* reinforced cable. The layering arm is designed to open easily for cleaning and maintenance, a simple two-step procedure releases the rollers.

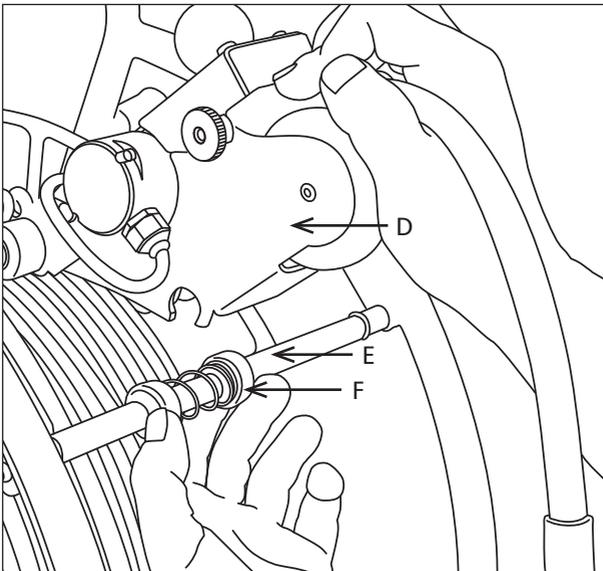
Cleaning and Maintenance



- 1 To release the rollers for cleaning and maintenance, start by unscrewing the two access pins (A).



- 2 Grip the lower arm (B) firmly, and use the knob (C) on the top arm to raise the arm and open the assembly.

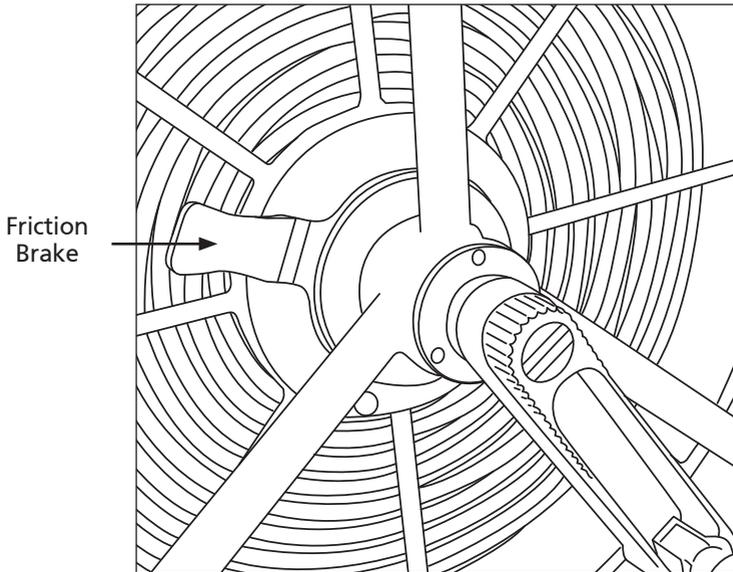


- 3 To release the assembly (D) from the meter counter bar (E) squeeze the spring clips (F) while lifting the assembly.

Friction Brake

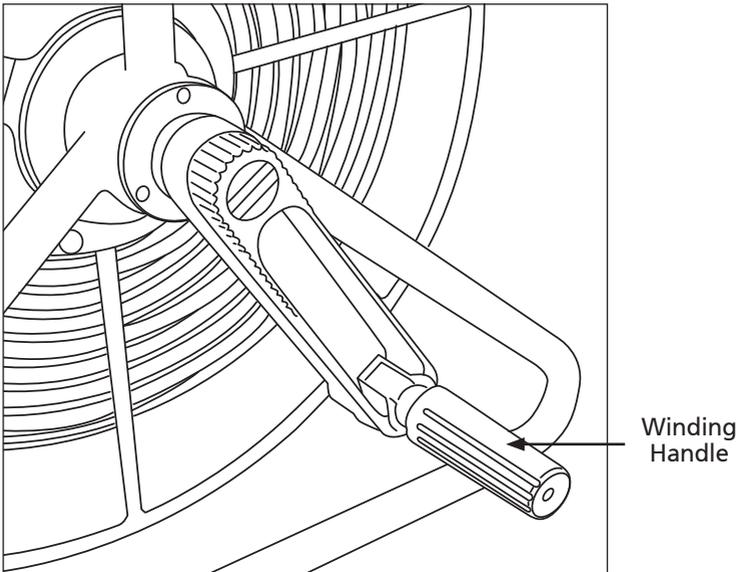
Using the friction brake is a simple one handed operation with 3 options:.

- 1 The brake can be fully locked
- 2 The brake can be unlocked
- 3 The brake can be applied as a friction brake to avoid unwanted pay-off of the cable.



Winding Handle

The winding handle is used for paying off and rewinding the cable. For safe storage and space saving, the grip handle can be folded inside the arm. For cleaning and maintenance the complete handle assembly can be unscrewed and removed from the frame.



Information and Care

Cleaning

Ensure that the reel and cable layering arm are thoroughly cleaned after each inspection. To release the cable layering arm for cleaning, follow the instructions on page 59. Use a damp rag when cleaning. Ensure the connector is free from dirt and moisture and fit the protective cap

Maintenance

Ensure that all screw threads and connections are free from dirt.



CAUTION!

High-pressure cleaners must not be used. It can cause considerable damage to the control unit, crawler, camera and other system components.

Cleaning agents or solvents must not be used. These can damage the seals and other materials on the system.

Only clean water should be used.



CAUTION!

The reel is rated to IP54 providing that the external media and expansion slot covers are fitted in place.

Proteus™ Crawler CPL150

The CPL150 Proteus crawler has the following features:

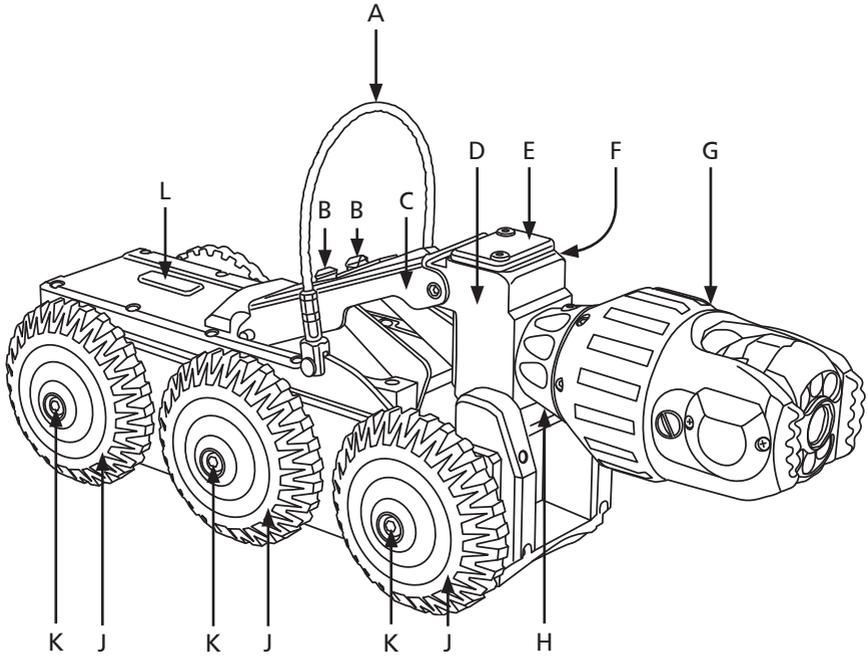
- Constant monitoring of the roll
- Constant monitoring of the internal pressure
- In-built manual elevator
- Optional auxiliary light module with backeye camera
- Multi-frequency sonde location transmitter (*Optional*)
- Inclination sensor for constant monitoring of the pitch (*Optional*)
- Performance wheels for specific conditions (*Optional*)

CPL150 is pressure-tight up to 1Bar, and is suitable for inspections up to 10m water depth.

CPL150 can be used for pipe inspections from 150mm upwards.

All six wheels of the crawler are driven by two motors ensuring that it is possible to move and steer the crawler on extremely difficult surfaces.

CPL150 Connections and Descriptions



- A Lowering handle
- B Hex bolts to elevator release
- C Manual elevator
- D Camera housing
- E Auxiliary light connection protector
- F Pressurisation point
- G Camera (CAM026)
- H Connector for camera
- J Crawler wheel
- K Quick Release Mechanism
- L Sonde (*available as optional extra*)

Information and Care

Pressurisation

The crawler must always be correctly filled with CO₂ or Nitrogen. The control unit displays the internal pressure.

Cleaning

Ensure the crawler is thoroughly cleaned after each inspection. Ensure the connectors are free from dirt and moisture. Always fit the dust caps immediately after disconnecting the crawler from the system.

Crawler wheels

For inspection in various pipe systems always use the appropriate wheel combinations.

Maintenance

Ensure that all screw threads and connections are free from dirt.



CAUTION!

High-pressure cleaners must not be used. It can cause considerable damage to the crawler, camera and other system components.

Cleaning agents or solvents must not be used. These can damage the seals and other materials on the system.

Only clean water should be used.



CAUTION!

Risk of fatal injuries caused by electrical current!

For all cleaning and maintenance work disconnect the system from the power supply.



IMPORTANT!

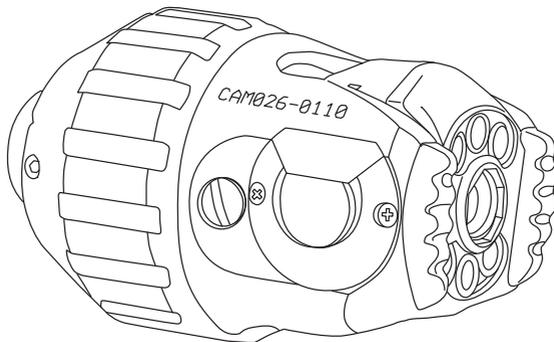
KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.

CAM026 – Pan & Rotate Camera Module

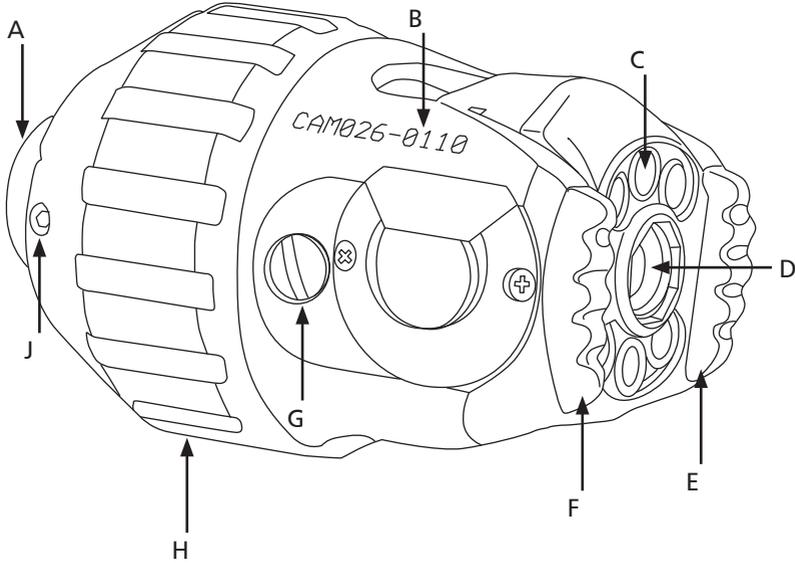
The camera module CAM026 provides a high resolution, colour, pan and rotate camera for the Proteus™ Lite platform. It has the following features:

- High resolution colour CCD image sensor
- Powerful LED lighting with narrow beam width lenses
- Endless rotation range
- Panning range of +/- 135°
- Motorised focus control
- Internal pressure monitoring
- Impact resistant with user replaceable rubber protectors

The camera module is pressure-tight up to 500m bar. It is suitable for inspections up to 5m water depth.



Connections and Descriptions



- A Camera connector
- B Serial number location
- C LED illumination
- D Camera lens
- E Rubber protector
- F Rubber protector
- G Pressure valve protection cap
- H Camera protection skid
- J Camera protection skid screws (x6)

Technical Details CAM026

Product ID:	CAM026
Dimensions:	120 x 73 x 73mm (L x W x H)
Power Consumption:	10W
Weight:	0.85Kg (1.87lb)
Temperature Range:	-20°C ~ +50° C
Environmental Protection:	Pressurised
Internal Pressure:	0 to 500mBar

Pressurising CAM026

- 1 Connect the Proteus™ Lite inspection system and apply power.
- 2 Unscrew the pressure valve protection cap (B) and screw on the pressure valve connection adaptor (A).
- 3 Set the pressure regulator for the CO₂ or Nitrogen to 5 PSI.
- 4 Ensure the crawler pressure is within the acceptable range by checking the pressure gauge on the control unit. An example is shown below.
Refer to theCCU section of this manual on specific instructions on how to access the pressure gauges.
- 5 Remove the pressure valve connection adaptor (A).
- 6 Refit the pressure valve protection cap (B).

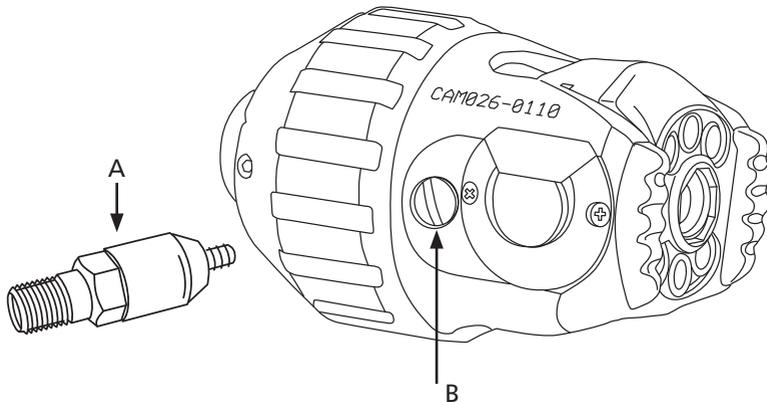


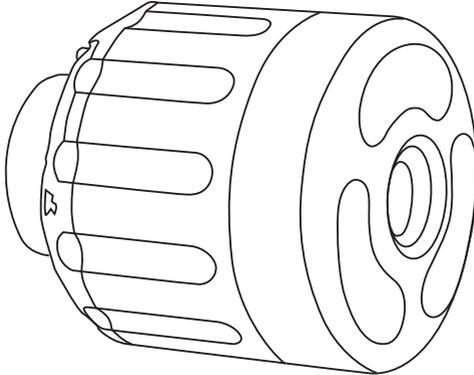
Image shows an example of the control unit crawler pressure gauge:

CAM027 – Axial Camera Module

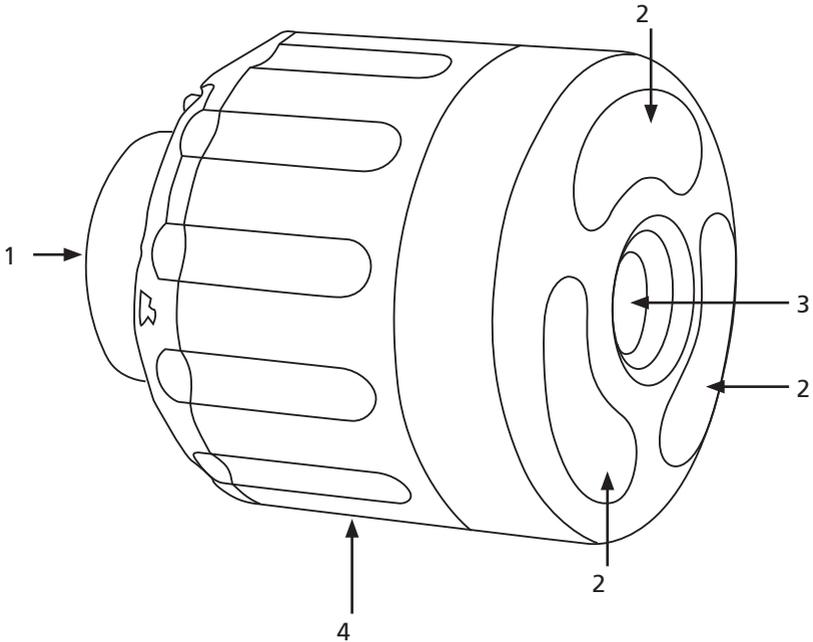
The camera module CAM027 provides a high resolution, colour, axial camera for the Proteus™ Lite inspection system. It has the following features:

- High resolution colour CCD image sensor
- Powerful LED lighting with narrow beam width lenses
- Motorised focus control

The camera module is not pressurised but is suitable for inspections up to 5m water depth.



Connections and Descriptions



- 1 Camera connector
- 2 LED illumination
- 3 Camera lens
- 4 Serial number location

Technical Details CAM027

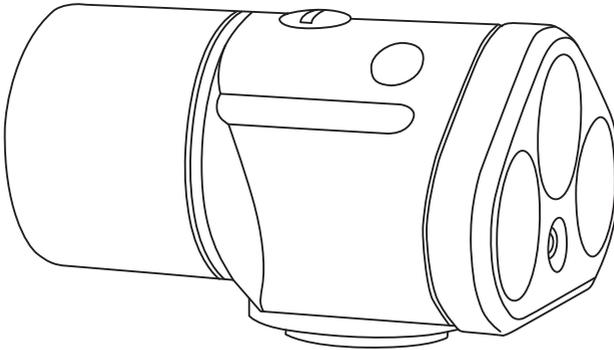
Product ID:	CAM027
Dimensions:	63 x 52 x 52mm (L x W x H)
Power Consumption:	7W
Weight:	0.25Kg (0.55lb)
Temperature Range:	-20°C ~ +50° C
Environmental Protection:	Pressurise Tested IP68
Internal Pressure:	None

ALB300 - Auxiliary Module

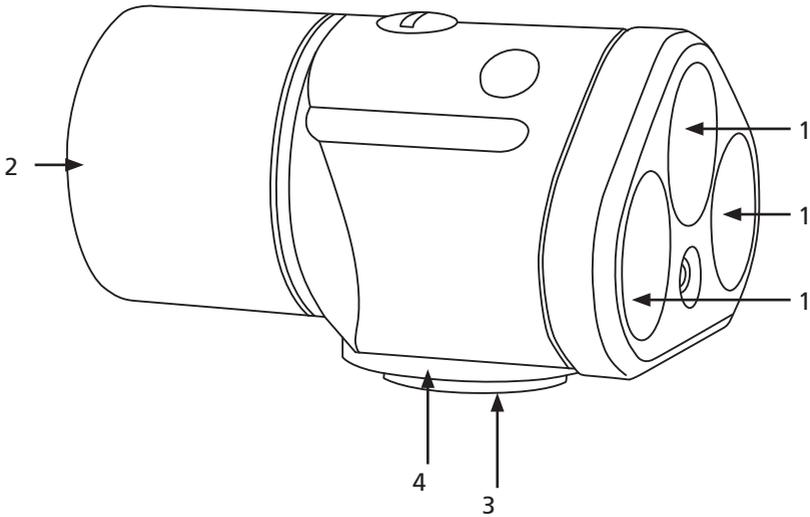
The auxiliary module ALB300 provides additional illumination for the forward view camera and a rear view, high resolution, colour, camera for the PROTEUS™ platform. It has the following features:

- High resolution colour CCD image sensor
- Powerful LED lighting with narrow beam width lenses

The auxiliary module is not pressurised but is suitable for inspections up to 5m water depth.



Connections and Descriptions



- 1 Forward LED illumination
- 2 Rear view camera
- 3 Connector
- 4 Serial number location

Technical Details ALB300

Product ID:	ALB300
Dimensions:	84 x 68 x 50mm (L x W x H)
Power Consumption:	4W
Weight:	0.32Kg (0.70lb)
Temperature Range:	-20°C ~ +50° C
Environmental Protection:	Pressurise Tested IP68
Internal Pressure:	None

Information and Care of Camera Modules

Pressurisation

The camera module must always be correctly filled with CO₂ or Nitrogen. The control unit displays the internal pressure.

Cleaning

Ensure the camera module is thoroughly cleaned after each inspection. Ensure the connector is free from dirt and moisture. Always fit the protective cap immediately after disconnecting the camera module from the system.

Maintenance

Ensure that all screw threads and connections are free from dirt. Replace the rubber protectors when worn or damaged.



CAUTION!

High-pressure cleaners must not be used. It can cause considerable damage to the crawler, camera and other system components.

Cleaning agents or solvents must not be used. These can damage the seals and other materials on the system.

Only clean water should be used.



IMPORTANT!

KEEP ALL ELECTRICAL CONNECTIONS AND CONTACTS FREE OF DIRT, GREASE AND MOISTURE AT ALL TIMES.



PRO PIPE+

WinCan Embedded and ProPIPE+
Reporting Software
for Proteus™ and SOLOPro+ Systems

Version B

Principle

WinCan Embedded and *ProPIPE+* on the *Proteus™* and *SOLOPro+* CCUs allows you to create and maintain your surveys collected together as “Projects”.

Within a Project you can have many separate “Sections”. For example, a “Project” might be a housing estate, and each street within that housing estate could be a “Section”.

Each Project is stored in it’s own Folder in memory. The Folder contains all the information about that Project’s Sections, and their videos, photos, and report documents.

You can:

- n Have as many Projects as you want.
- n Add Sections to Projects whenever you want.
- n Create, close, save, reopen, and edit previously created Projects.
- n Reopen and edit Section Surveys, even after you’ve finished the Survey.
- n Create PDF and RTF report documents in a choice of graphical or textual styles.
- n Export your Projects Folder onto a USB memory device for later viewing on a PC.
- n Import and merge together Sections from Projects made on other CCUs.
- n Import *WinCan* Projects into *WinCan VX* on the PC.
- n Upload files from *WinCan* Projects directly from the CCU to the *WinCanWeb* cloud.

Basic Usage

The structure is:

- n You can have multiple Projects, each has it's own storage folder.
- n A Project can contain multiple Sections.
- n Each Section has Header Information and a Survey.
- n A Survey can have multiple Observations and Photos, and a Video recording.

The basic operating sequence is:

- n Select *WinCan* or *ProPIPE+* as your Project type.
- n Create a New Project or open an Existing Project.
- n Create a New Section in that Project, or open an existing Section.
- n Perform the Survey, first filling in the Header Information, then making Observations.
- n End the Survey.
- n Review and edit the Survey if you want to.
- n Create a report from a choice of different styles. You get an RTF report document and a PDF report document.
- n Export the Project to a USB memory device so you can view on the PC.
- n **For *WinCan* Projects, these can be imported into *WinCan VX* on the PC.**

Quick User Guide

Refer to this Quick User Guide when the CCU is directly available. The Quick Guide does not explain every screen, or key, or scenario, and relies on you physically seeing it operating on the CCU as you work through the guide.

In a separate section later in this document is a Detailed User Guide containing screenshots and more information.

Create a New Project

- n Press  then choose  or 
- n Press  to create a New Project.
- n Use  and  to select the survey standard.
- n Enter the Project Name and comments (use  to navigate between fields).
- n Press  to create the Project, then this New Project will be listed as available.

Choose Which Project to use

- n Use  and  to highlight the Project Name you require and then press . This then opens the Project for you to create your Sections.

Create a Section in the Project

- n Press  then  to create a New Section.
- n Enter the Section Name and comments then press  to create the Section.
- n Your newly created Section will then appear in your Project.

Select the Project Section to use

- n Use  and  to highlight the Section name you require and press . This will then open the Section for you to enter the Section Header details.

Enter the Section Header Information

- n Enter all relevant Section Header information. Anything marked with a  is required information which needs to be entered to be able to proceed to next page. There may be several pages of Header Information.
- n If you would like to display any of the Header Information on the live video 'project bar text', press . This then displays the  and  keys for you to select the information you would like to display by highlighting the desired Header Information line

and pressing the relevant  and/or  key.

- n When all Header Information pages have been completed press .
- n Now you can enter some Text Comments which will appear in the final report document along with the observations.
- n After entering your comments press  to prepare for starting the Survey.
- n The screen will say "Ready for Survey" and informs you to press the  'Record' key when you want to begin. Press  now and this information box will disappear.
- n The screen will now display a live picture with your chosen Header Information showing on-screen.

Start Your Survey

- n Get your inspection equipment into position.
- n Start your recording by pressing the  key. A red recording symbol  will appear in the Status Box on the right of the screen which indicates your video recording and survey has begun. After a few seconds the on-screen video text will automatically disappear so that you can proceed with survey.

Create a New Observation

- n When you come to a point in your survey where you need to create a New Observation press  which will automatically pause the recording and show a Control Menu. Now you can either enter the Defect Code if you know it, or press to  select Survey Code Lookup which will give you a selection of Defect Category Folders to explore, then highlight the relevant Defect Code and press . Once you have entered or selected your Defect Code you fill in the information it asks for. Then press  to store the New Observation with *no photo* or press  to store *with a photo*.
- n Now you can continue your Survey. The system will automatically resume recording, and after a couple of seconds the observational text will disappear from the live picture.



NOTE!

If you move the camera before auto recording resumes you may notice a slight jump in the video playback!

- n Repeat these steps each time you wish to capture a new observation.

Review Your Survey

- n At any time, you can review the Observations in your survey. Press  and select Review Survey. This will show you each observation you have created with the meterage displayed along with the captured image.

End Your Survey

- n To end the survey press  then in the control menu that appears select End Survey and press . You will be prompted to Confirm End Survey by pressing .
- n A summary of the Section which has just been completed is then shown.
- n If multiple surveys are being performed immediately within the same Project, press  and then press  to create a New Section, then repeat everything, starting from that New Section's creation.
- n Otherwise you can just create a report for that section if you wish to.

Create Your Report Documents

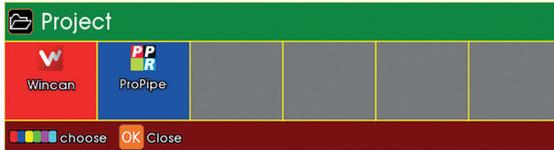
n To create an instant PDF report press . Then choose the style

of report that you want. The report is saved into the Project's folder along with the video and photos. You can copy the report onto a USB memory device using the Gallery Browser for later printing on a PC, or you can copy it to USB using the Project Export feature.

Detailed User Guide

Using Projects

Each Project is stored in it's own Folder in memory. The Folder contains all the information about that Project's Sections, and their videos, photos, and report documents.



Press the Projects  key, and the Project Type choice appears.

n Choose  or 

The Projects List appears

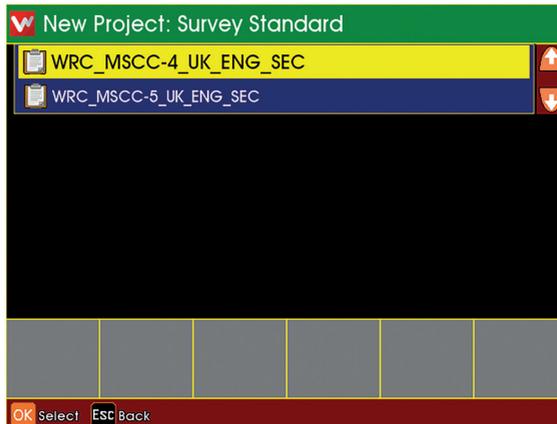


- n If you have any existing Projects, they will appear in the list.
- n If you have no existing Projects, the list will be empty

Choose New Project or an Existing Project

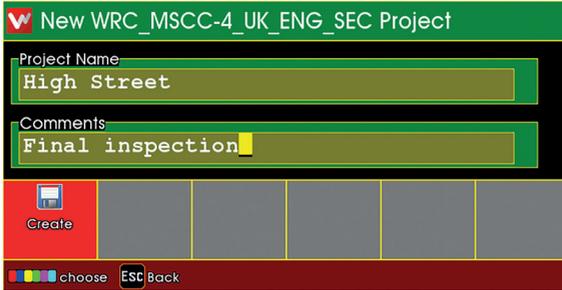
- To create a New Project, press  .
 - Or to open an existing Project, highlight it using the arrows  and then press  .
-

If you chose to create a New Project



- n Use the arrows  to select which Inspection Standard you wish to use, then press  .
- n Enter a Name for the Project.

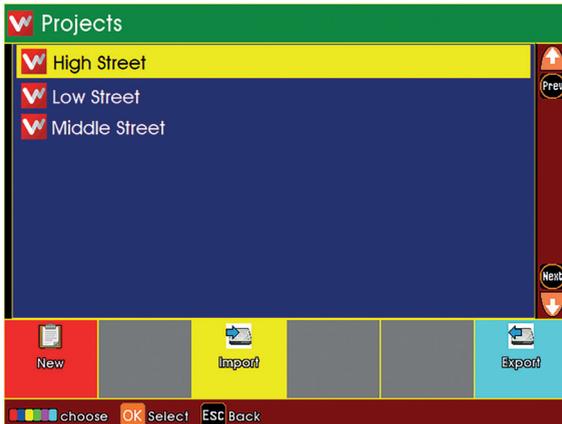
- n You may also enter Comments for the Project of you wish.



- n Press  to create the Project.

The Projects List appears

- n If you just created a New Project, it will appear in this list



- n Choose a Project to open
- n Highlight the Project using the arrows  and press  .

The project is now opened



n A summary of the Project is shown.

n A New Project will not yet have any Sections.

n An existing Project may already have Sections.

Press  to see existing Sections or create New Sections in the Project.

Using Project Sections

Each Project can contain either just one, or multiple Sections.

The list of Existing Sections is shown

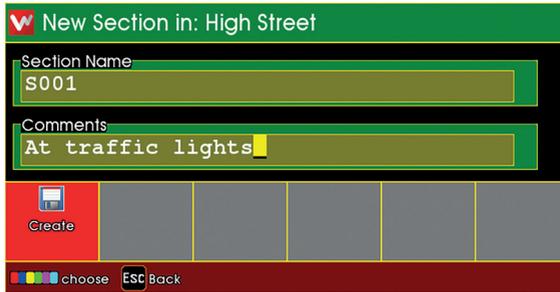


- n If the Project has any existing Sections, they will appear in the list.
- n If the Project has no existing Sections, the list will be empty.

You can choose to create a New Section in the Project, or open an Existing Section

- n To create a New Section, press  .
- n Or to open an existing Section, highlight it using the arrows  and then press  .

If you chose to create a new section



New Section in: High Street

Section Name
S001

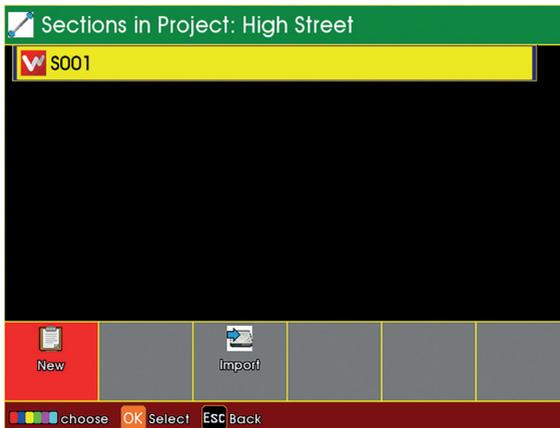
Comments
At traffic lights

Create

choose ESC Back

- n Enter a name for the Section.
- n You may also enter comments for the Section of you wish.
- n Press  to create the Section.

The Sections List appears



Sections in Project: High Street

S001

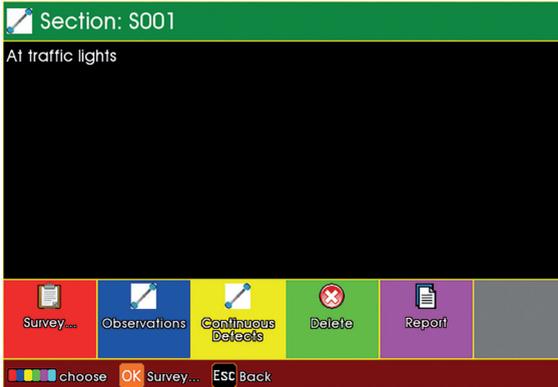
New Import

choose OK Select ESC Back

- n If you just created a New Section, it will appear in this list.
- n Choose a Section to open.
- n Highlight the Section using the arrows  and then press .

The Section is now opened

n A summary of the Section is shown.



If this is a New Section, you will need to perform the survey for the Section, so that you can create Survey Observations.

n Press  to begin performing the survey and create Observations.

If this is an Existing Section, it may already have had a survey performed for it, and will have existing Observations.

n Press  to review the existing Observations for this Section.

You can generate a Report Document for the survey Observations in this Section

n Press  to generate a Report Document

Preparing for the Survey

Entering Survey Header Information

If you chose to perform a survey for the Section:

The Survey Header Information appears

The screenshot shows a software interface for entering survey header information. The title bar reads "Section: S001" and "1/6". The form contains several input fields:

- Job reference: Job001234
- Location Code: FWY: A footway beside a road
- Client: Council
- Contractor's Job reference: CN5645
- Name of Surveyor: Jim Smith
- Street/Location: High Street

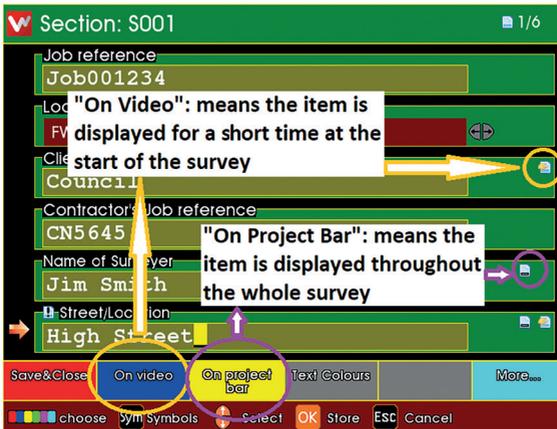
A yellow callout box with a red arrow points to the "Street/Location" field, containing the text: **Means: Mandatory information that must be provided**. The field itself has a small blue exclamation mark icon to its left. The bottom of the form has a red bar with buttons: "Save&Close", "Free Text", and "More...". Below that is a dark red bar with icons and labels: "choose", "Sym Symbols", "Select", "OK Store", and "ESC Cancel".

- n Type in, or select, the appropriate information for the survey.
- n Anything marked with a  is mandatory information that must be provided.
- n There may be several pages of Header Information.

For each Header Information item, you can choose whether

- n it is displayed briefly onto the camera picture “On Video” at the start of the survey.
- n you would like it displayed constantly “On Project Bar” throughout the whole survey.

Press the **More...** key, and the choices of the coloured keys change.

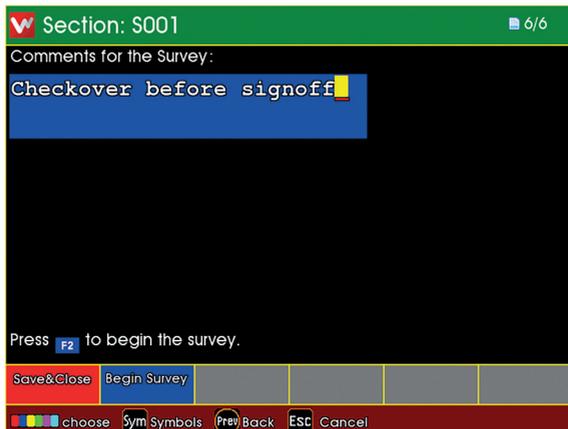


- n Press **On video** to toggle whether the Header Item is shown briefly at the start of the survey.
- n Press **On project bar** to toggle whether the Header Item is shown constantly throughout the survey.
- n Header Items can be both “On Video” and also “On Project Bar”.
- n There is a limit to the number of Header Items that can be selected simultaneously.



After entering all the Header Information, you can enter some comments for the Survey

- n Type in some Survey Comments if you wish
- n Then press **Begin Survey** to prepare for performing the survey.



The system is now in Survey Standby, waiting for you to begin the survey.

n Video recording is ready, but is paused.

n Press the **OK** key, and position the inspection equipment ready for the survey.



Beginning the Survey

When you are ready to start video recording, press the  Record key.

- n Video recording starts.



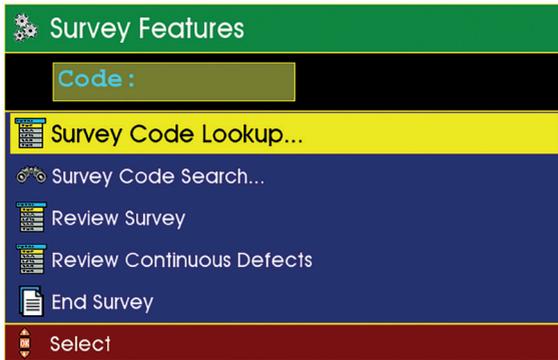
- n Your selected “On Video” Header Information text about the survey appears on the camera screen, and is recorded onto video.
- n After a short time, this information is removed.
- n You can now perform the inspection Survey.

Performing the Survey

Creating Defect Observations

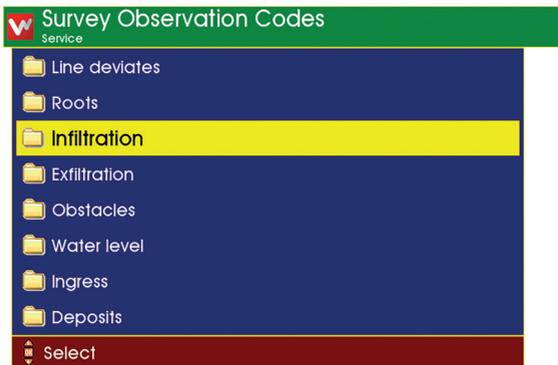
When you see a Defect, you can create an Observation for it.

Press the Projects  key, and the Survey Features menu appears.



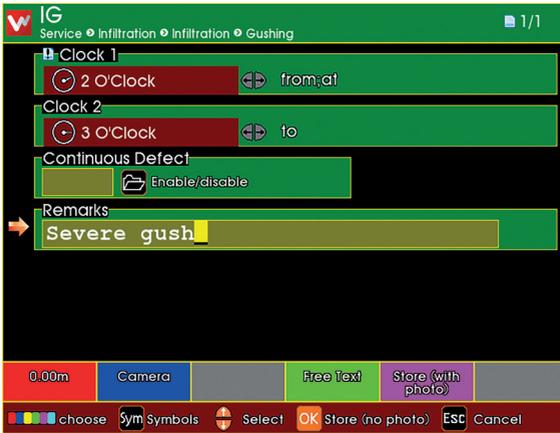
- n If you know the Defect Code, you can simply type it in.
- n If you don't know the code, you can search, or you can use the Lookup to find it.

If you chose to Lookup the Defect Code:
You see a list of the Defect Code categories



- n Use the arrows , **Esc**, and **OK** to browse the Defect Code categories to find the Defect Code that you require.
- n When you have found the Defect Code, press **OK**.

Enter the information for the Observation



- n Type in, or select, the appropriate information for the Observation.
- n Anything marked with a  is mandatory information that must be provided.
- n There may be more than one page of Observation Information.
- n When you have entered the information, you can store the Observation.
- n Press  to store without taking a photo.
- n Press  to take a photo then store.

If you chose to take a photo:

- n Your entered Observation Text information is shown on the camera screen

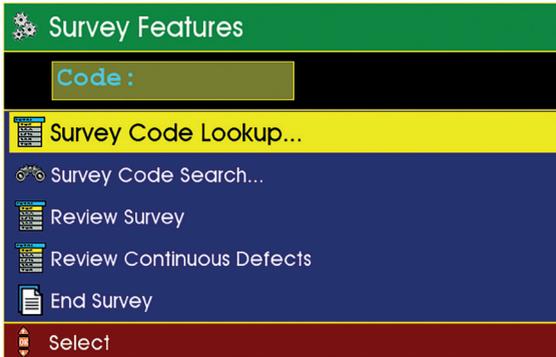


- n The system takes a photo, with this information on it.
- n After a short time, the information is removed.

Video recording then restarts automatically and you can now move on to find the next Defect.

Ending the Survey

Press the Projects  key, and the Survey Features menu appears.



n Select End Survey and press .



You are asked to confirm you do want to end the survey.

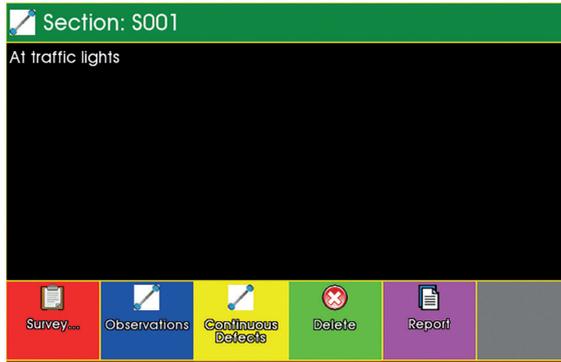
n Press  to confirm.

n Any other key cancels ending the survey.

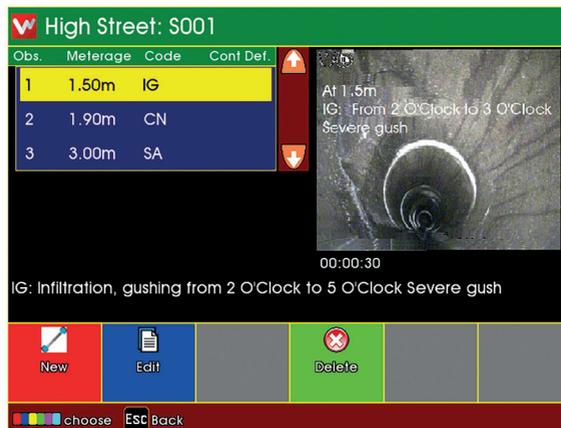
Reviewing the Survey

Viewing the Observations

When you have selected a Section, the Section Information is shown.



n Press  to Review the existing Observations for this Section.



The Section Observations are shown.

n Use the arrow keys  to select the Observation you are interested in. The screen shows the Observation information and the photo (if there is one).

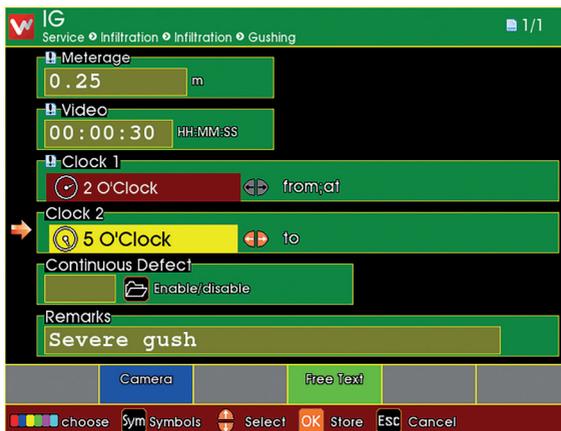
n Press  if you want to Edit and change the selected Observation.

n Press  if you want to Delete the Observation (you will be asked to confirm the delete). You can also create a New Observation, if one was missed when the Survey was being performed.

n Press  to create a New Observation.

Editing an Existing Observation

When you have selected the Observation to be edited, the Observation Information is shown.

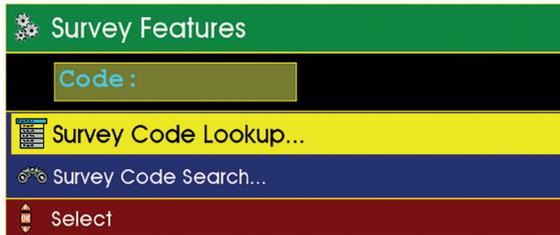


n Make any changes as you desire.

n Press  to store your changes to that Observation.

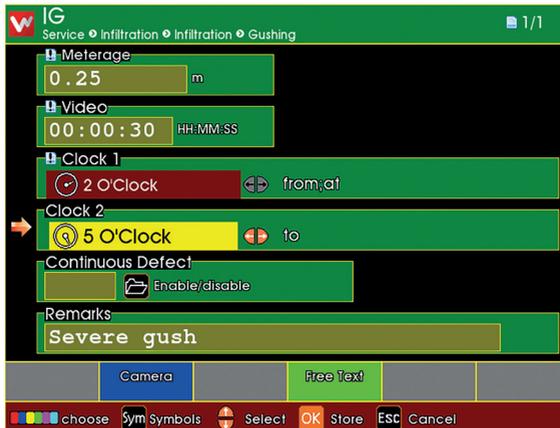
Creating a New Observation

When you have chosen to create a New Observation



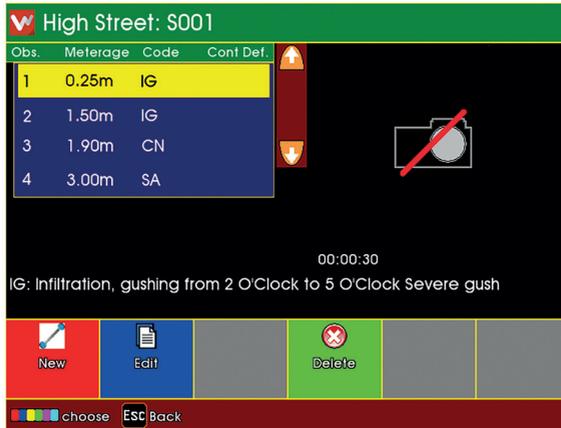
- n First select the Defect Code for that New Observation.
- n This is done in the same way as when the Survey was originally per formed.
- n Either enter the Defect Code directly, or use Search, or use the Lookup.

When you have selected the Defect Code for the new Observation, the Observation Information is shown.



- n Enter the information as desired.
- n Press **OK** to store this as a New Observation.

Your New Observation now appears added into in the Review List of Observations.



- n New created Observations don't have photos.
- n The Observations are sorted into ascending distance order.

Creating Reports

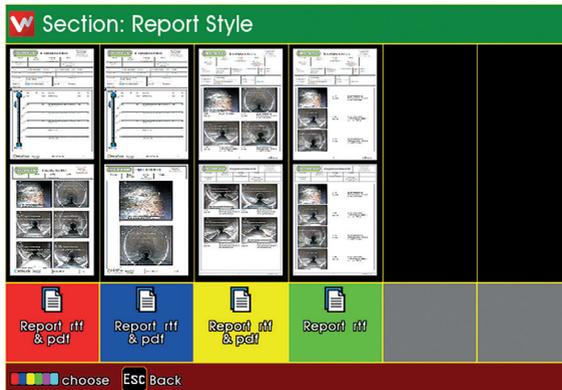
Creating Reports for the Whole Project

When you have selected and opened a Project, the Project Information is shown.



- n Press  to generate Report Documents for the whole Project.
- n Depending upon Project and Section complexity, this could take some minutes.

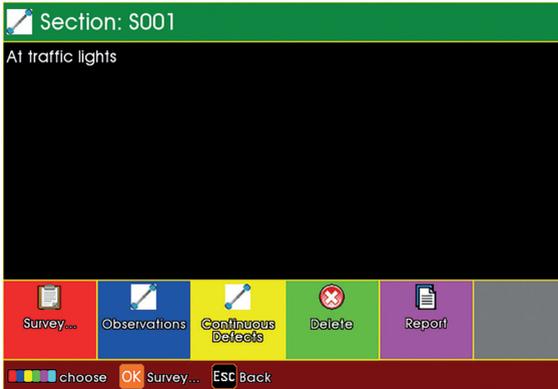
Previews of the various Report Styles are displayed.



- n Press the relevant coloured key to generate a report document of your chosen style.
- n Most reports are generated as both RTF and PDF documents.
- n The  style generates only RTF.
- n The report documents are stored into the Project's memory Folder, along with the Project's video and photo files.

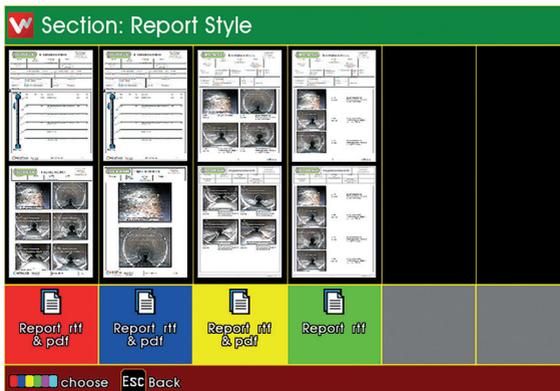
Creating Reports for a Selected Section

When you have selected a Section, the Section Information is shown.



- n Press  to generate Report Documents of this Section.

Previews of the various Report Styles are displayed.



- n Press the relevant coloured key to generate a report document of your chosen style
- n Most reports are generated as both RTF and PDF documents.

- n The  style generates only RTF.

- n The report documents are stored into the Project's memory Folder, along with the Project's video and photo files.

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 SOLOPro 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 SOLOPro 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.

Product Serial Numbers

Enter your product serial numbers below for future reference:

PRODUCT	SERIAL NUMBER
CCU208	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
RMPL250	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
CAP250	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
CPL150	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
CAM026	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
CAM027	- <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

Useful Information

UK Customers:

For service and repair contact Minicam

Tel: +44 (0) 1942 270524

Email: service@minicam.co.uk

International Customers:

For service and repair contact your local Minicam Approved Dealer



View Minicam "How To" videos on our YouTube Channel



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