SPARTAN TOOL

FOR TOUGH CUSTOMERS. SINCE 1943.

PRODUCT MANUAL

Explorer

Video Inspection System

Contents

Warnings ⚠️

Spartan Tool has taken care to provide all necessary information in this manual for the safe operation, maintenance and disposal of the equipment. However, a risk assessment should be performed prior to commencing work as it may highlight additional safety issues specific to the application.

- **WARNING:** Do not use a power supply cord except the one supplied with this unit for use with the power supply.

- **WARNING:** The coiler and camera assembly used with the Explorer unit are heavy. Observe safe lifting procedures when lifting or moving any components of the system.

- **WARNING:** If the system or any auxiliary components are connected to the power supply, then the external equipment must be grounded in accordance with the manufacturer's instructions. Failure to comply with this may cause a risk of electrocution.

- **WARNING:** The line power adapter supplied with the unit is not intended for use in wet or outdoor environments. Do not attempt to charge or operate the unit from the line supply in wet areas or outdoors locations.

- **NOTE:** The unit will operate from its internal battery for up to 6 hours in normal use. A 12V adapter cable is provided for charging from a vehicle auxiliary system when in remote or wet locations. There should be no requirement to charge or operate from line power while outdoors.

- **WARNING:** Foul sewer systems and other watercourses can be a source of biological hazards. Always use appropriate PPE and take suitable precautions to prevent infection when using the Explorer camera system and coiler.

- **WARNING:** This unit is not designed or approved for use where potentially explosive gases, vapors, liquids or solids may be present. Always carry out a risk assessment of the site where the equipment is to be used.

- **CAUTION:** Take care that video or power cables do not become entangled in the coiler reel.

- **WARNING:** Only use the line power adapter and 12V adapter cable supplied with the unit. Use of any other power supply or adapter may cause a safety hazard or damage to the unit and will void any warranty.

- **WARNING:** Power equipment is inspected and factory tested for electrical safety. Routine inspection of cables and connections is recommended (and may be required by law) to maintain protection from electric shock. If you are unsure, contact your local safety authority for advice.

- **WARNING:** The camera LEDs are very bright. Do not look directly are the LEDs or point them at other people when turned on.

- **CAUTION:** Exposing the battery to temperatures above 140°F may activate safety systems and cause a permanent battery failure.

- **CAUTION:** Do not attempt to operate or charge the unit outside its recommended temperature specification. The unit will not charge outside the recommended temperature range of the battery. Attempting to charge it outside this range may damage the battery or reduce its life.

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SCREEN AND SOFTWARE

- 10.4" super-bright sunlight readable LCD display with auto brightness

- Embedded industry standard WinCan software included—no more double inputting, saving you time and money

- Other reporting software includes basic text overlay

- Future-proof—software updates via the internet

- Freeze-frame snapshot capability at any time

- System health status

WATERPROOF DESIGN

- All-weather waterproof construction—IP Rated: IP64 Open & Closed

- Can be washed down after use

- Tough, waterproof and ergonomic QWERTY keypad

HARDWARE CAPABILITIES

- Rechargeable Li-ion battery with up to 9 hours running time

- Control box is interchangeable with all reel and push-rod configurations

- 130', 200', 330', and 400' reels available

- 5mm, 12mm, and 14mm diameter push-rods available

- Innovative easy-mount camera head to reel interface

- Two interchangeable camera heads available

- CCD color camera

- Super-bright LED illumination

- Super low LUX sensitivity

- Stainless steel camera head

- Built-in 512Hz sonde locator (44mm camera head)*

- Meterage counter

- Open reel design for easy cleaning

*Sonde locator not included with model L130.

ALL REELS

- 800 x 600 resolution

- Innovative easy-mount camera head to reel interface

- CCD color camera

- Super-bright LED illumination

- Super-low LUX sensitivity

- Built-in 512 Hz sonde locator (*Not included with model L130*)

- Open reel design for easy cleaning

M130 SEWER CAMERA REEL

- 130' reel length

- 23mm camera head included

L130 SEWER CAMERA REEL

- 130' reel length

- 44mm camera head included

Note: The L130 camera head does NOT include a sonde

L200 SEWER CAMERA REEL

- 200' reel length
- 44mm camera head included

L330 SEWER CAMERA REEL

- 330' reel length
- 44mm camera head included

XL400 SEWER CAMERA REEL

- 400' reel length
- 44mm camera head included

Keyboard Layout
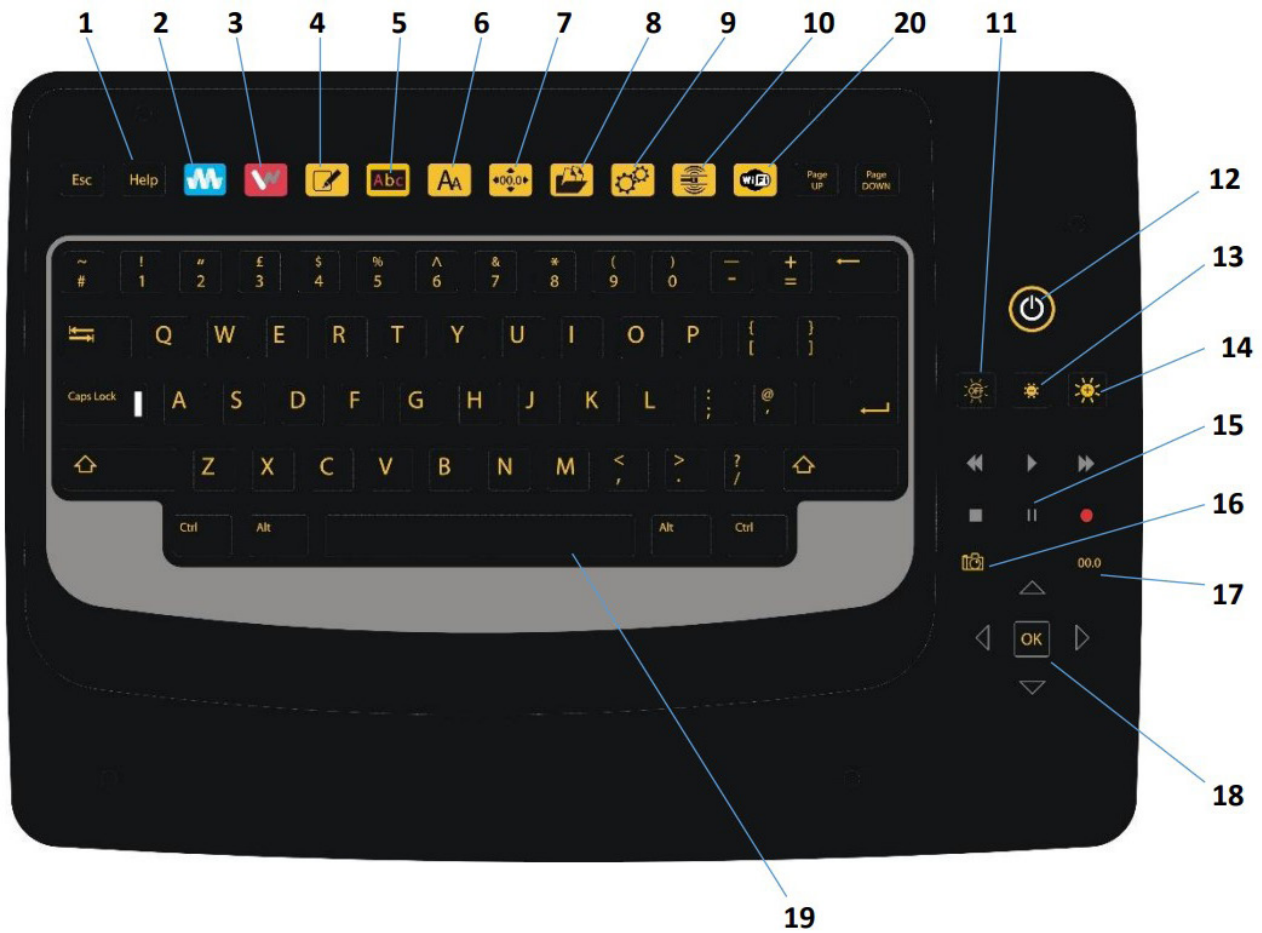
1. Help key
2. Mina Survey key
3. WinCan Survey key
4. Overlay key
5. Overlay Style key
6. Overlay Size key
7. Meterage Placement key
8. File Manager key
9. Settings key
10.

11. Lamp Off key
12. Power button
13. Lamp - key
14. Lamp + key
15. Video Control key
16. Snapshot key
17. Meterage reset/Footage Zero key
18. Arrow keys
19. Wi-Fi Shortcut key

Screen

Input/Output
Port (covered)

Keyboard
Connection Cord

INPUT/OUTPUT PORT

USB Ports

Audio Out

Audio In

Covered

Uncovered

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Physical Components
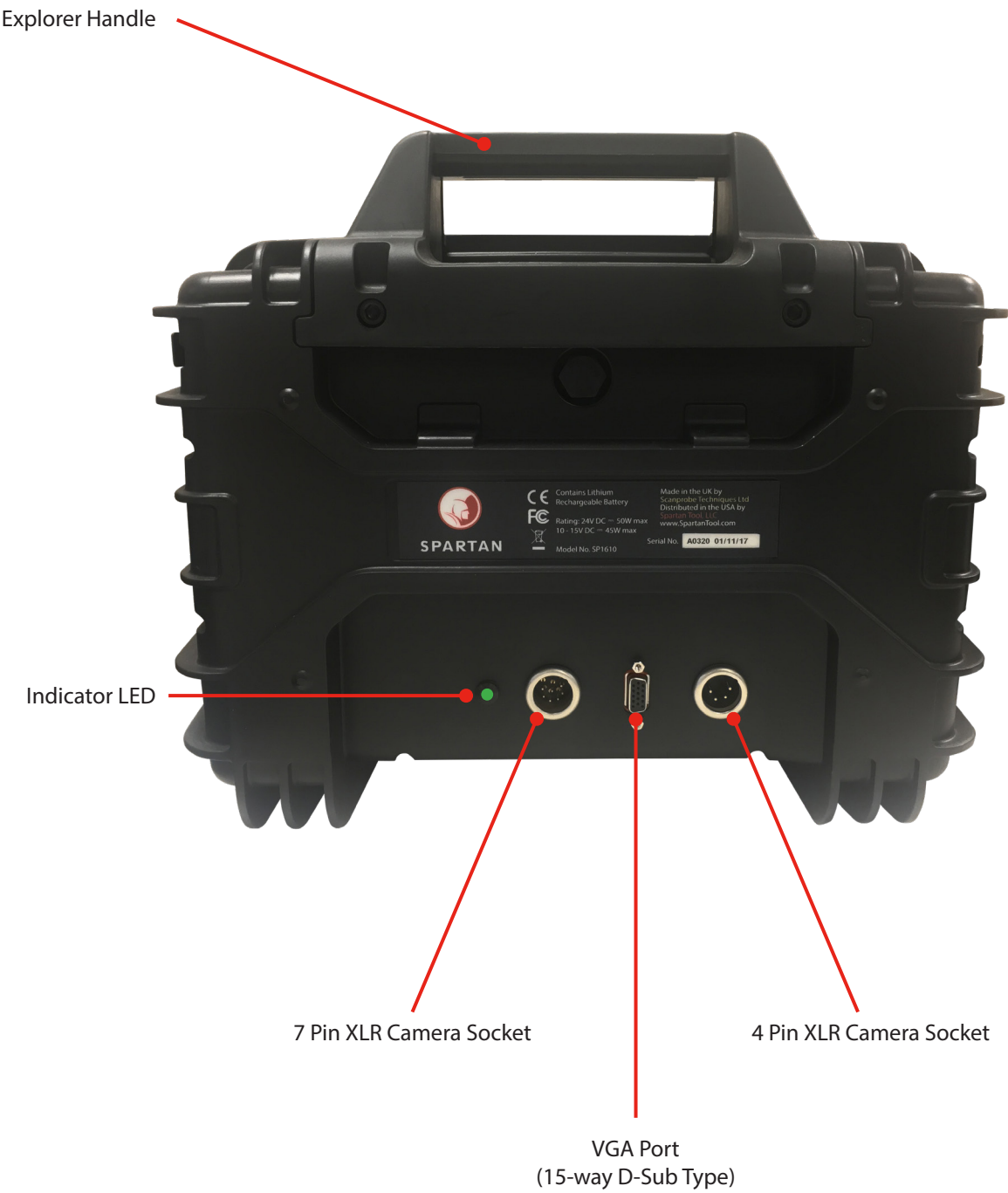
Explorer Handle

Indicator LED

7 Pin XLR Camera Socket

4 Pin XLR Camera Socket

VGA Port
(15-way D-Sub Type)

> ⚠️ **WARNING:** The line power adapter supplied with the unit is not intended for use in wet or outdoor environments. Do not attempt to charge or operate the unit from the line supply in wet areas or outdoor locations.

> ⚠️ **WARNING:** Read the product manual thoroughly before using any Spartan Tool product. Sewer and drain cleaning can be dangerous if proper procedures ae not followed. Know the proper operation, correct applications, and the limitations of all Spartan Tool products before use.

GROUNDING INSTRUCTIONS

Before charing your Spartan Explorer, make sure it is properly grounded, using a three-hole electrical outlet. If this is not available, as in some older homes, use a three-prong adapter and connect the green pigtail (or grounding lug) to a known ground such as a cold water pipe. Never cut off the grounding prong for use in a two-hole outlet receptacle. By doing so, you have cut off your protection from shock.

The Explorer must be grounded while charging or operating using the 110V power cord to protect the operator from electrical shock. The Explorer comes with a three-conductor cord and three-prong grounding type plug to fit the properly grounded receptacle. An adapter (see Figures B and C) is available for connecting Figure A type plugs to a two-prong receptacle, except in Canada.
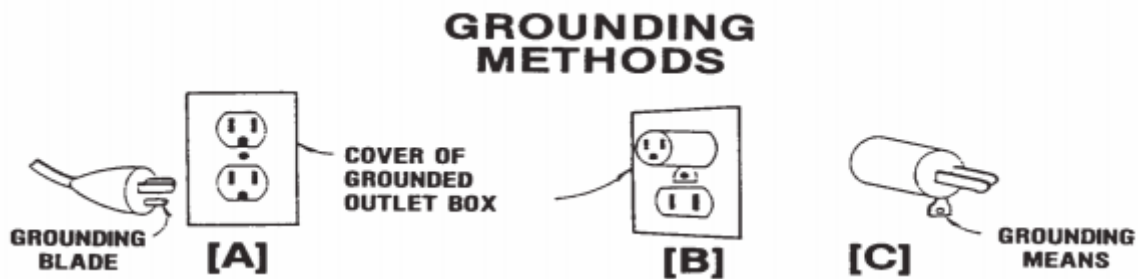
The green-colored rigid ear (or lug), extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

Don't assume that all three-hole outlets are properly installed. Check the outlet and also the adapter with an outlet testing device, which quickly indicates if a ground is connected. Correct a faulty test indication before proceeding. The use of a Ground Fault Interruptor is the safest way to ensure protection against ground faults.

Power and Grounding

EXTENSION CORDS

Plug the power cord attached to the Explorer directly into an inspected outlet. If an extension cord must be used, it must be of an approved three-wire type in good condition, equipped with a three-prong plug. Never cut off the grounding prong for use in a two-hole outlet receptacle. By doing so you have cut off your protection from shock.

OUTDOOR EXTENSION CORDS

When Spartan Tool equipment is used outdoors, use an extension cord intended for use outdoors and so marked.

AVOID ELECTRICAL CORD ABUSE

- Never move or lift Spartan Tool equipment by the cord.

- Do not yank cord at one end to disconnect it from the receptacle.

- Keep cord away from heat, oil, and sharp edges to avoid damage.

- Always replace or repair damaged cords.

- **ALWAYS WEAR RUBBER BOOTS IN WET AREAS FOR ADDED PROTECTION.**

⚠️ **WARNING:** Spartan Tool products must **never** be operated in an explosive environment.

⚠️ **CAUTION:** Avoid eye or skin contact with acids or caustic substances while inspection sewers and drains.

Always wear safety goggles when inspecting drains and sewers to avoid eye injury.

Before beginning work, ask the customer if either acids or caustic substances are present in the pipe. If in doubt, litmus paper used in the opening of the pipe may give an indication of the type of substance in the line.

Exposure to acids or caustic substances can cause the push cable to become brittle. Continued exposure may cause the push cables to break or become brittle in the drum, in the pipe, or when placing the cable back into the drum.

⚠️ **CAUTION:** Drains and sewers carry bacteria and exposure carries the risk of infectious disease.

Always wear safety goggles and rubber gloves inside Spartan Tool riveted gloves to minimize exposure to infection from bacteria in pipes.

Avoid contact of pipe contents with ears, eyes, and mouth to lower the risk of infection.

Avoid exposing any cuts to drains and sewers and sewer inspection equipment.

DO NOT SMOKE near open pipes.

HOW TO CONNECT THE CAMERA AND CHARGER TO POWER SUPPLY

⚠️ **CAUTION:** Only use the power supply and connecting cords supplied with this system. Using any other power supply or connecting cord may cause damage to the unit and will void any warranty.

⚠️ **CAUTION:** The power adapter is not rated for outdoor use or use in wet conditions. Only charge or operate the unit from line power when used in a dry, indoor environment. A 12V adapter cable is provided for use outdoors, e.g. by charging from a vehicle auxiliary supply.

1. Plug the 7-pin XLR connector cable into the camera socket on the back of the unit. Plug the other end of the camera cable into the socket on the coiler axle.

2. For line power operation or charging, plug the 4-pin XLR connector from the power adapter into the power socket on the back of the unit. Connect the power adapter to a suitable power supply (100V-240V AC 50-60Hz).

3. For 12V operation or charging, plug the 4-pin XLR connector from the 12V adapter cable into a 12V auxiliary socket (lighter socket) on your vehicle.

⚠️ **CAUTION:** Ensure the vehicle can supply 12V at 5A from the auxiliary socket. Do not use adapters or splitters between the socket and the Explorer unit as this may overload the vehicle or adapter wiring and cause it to overheat.

4. When charging, the LED on the rear of the unit should glow red. When the unit is fully charged, the LED will turn green. If no power supply is present, the LED will be off.

7-Pin XLR
Camera Socket

4-Pin XLR
Power Socket

Indicator LED

VGA Port
(15-Way D-Sub Type)
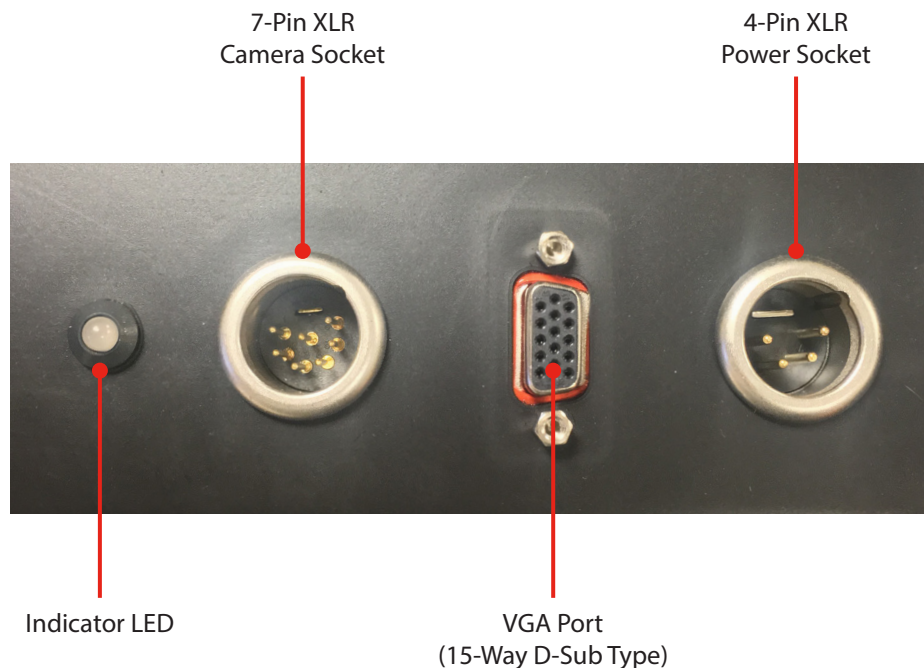
Operating Instructions

POWERING ON

1. Unlatch and open unit.

2. Press and hold the power button for 2 seconds. The unit will start and progress will be shown on the screen.

3. When the unit is ready, press the enter key to start the video display.
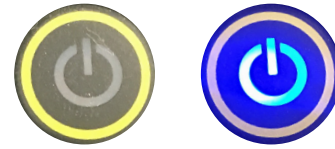
POWERING OFF

1. Before powering off, ensure that all video recording is completed and the files have been saved.

2. Press the power button for more than 2 seconds to shut the unit down. The power button light will flash until the unit has finished shutting down.

3. Battery life is rated at up to 9 hours running time. If the battery is low, the unit will beep once per second. If the unit is left running, it will shut down automatically after about 10 minutes of low battery warning.

HOW TO CONNECT THE CAMERA TO THE PUSH ROD

1. Be sure to align the connector correctly using the key way pin and the connector terminals male to female and vice versa.
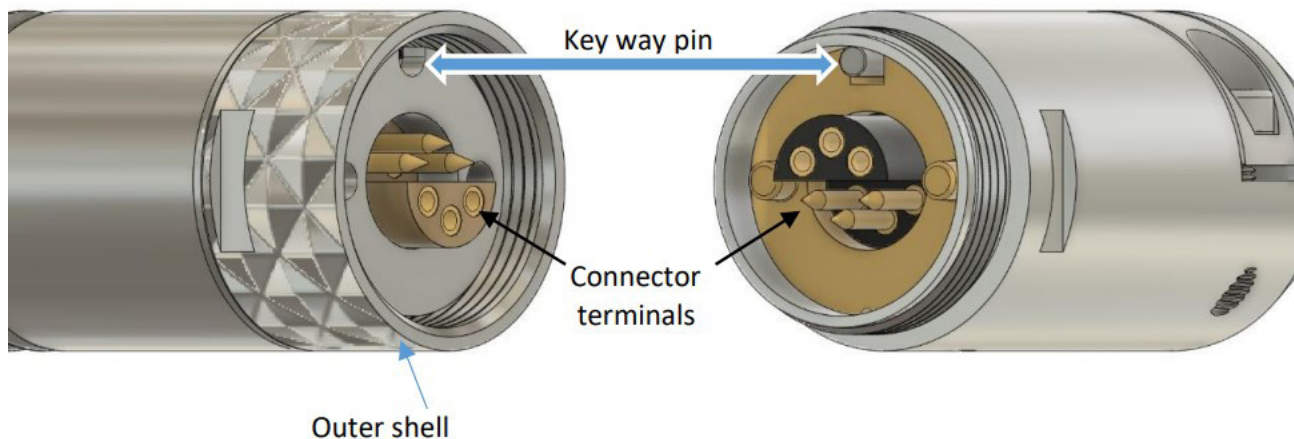
2. When you are happy with the alignment, push the male and female connectors together.

3. Screw the outer shell over both parts.

4. Hold the rod connector and camera still, so ONLY the outer shell can rotate.

5. Using the camera spanners, screw the outer shell over the rod connector until tight.

HOW TO USE THE COILER

⚠️ **CAUTION:** The coiler and camera assembly used with the Explorer unit are heavy. Observe safe lifting procedures when lifting or moving any components of this system.

1. To set the position of the footage readout on screen, press the footage counter key.

2. Use the arrow keys to move the footage eadout to the required position on screen. Hold shift and use the arrow keys to make fine adjustments.

3. Press the OK button to fix the position.

4. Turn the coiler until the camera head is in the start position and then press the footage zero button.

5. The footage on screen will return to zero. Hold for 2 seconds.

6. The footage readout is reset to zero when the unit is turned on.

7. The footage will not be accurate unless the coiler type matched the one selected in the settings menu. To change the coiler type, go to the settings menu, select coiler and select the coiler type or add a manual calibration number (feet per turn). Select Save Settings and press OK.

HOW TO ACTIVATE THE SONDE

- Press the Sonde on/off button at the hub of the coiler.

- When the button is illuminated, the sonde is on.

   _NOTE:_ _The M130 coiler does not have an on/off for the sonde; it is always activated._

OFF

ON

HOW TO ADJUST THE CAMERA LIGHT

⚠️ **WARNING:** The camera LEDs are very bright. Do not look directly at LEDs or point them at other people when turned on.

1. To make the light the brighter, press the Lamp + button.

2. To make the light dimmer, press the Lamp - button.

3. There are 21 levels of brightness (including off).

4. The lamp off button will switch the lamp off.
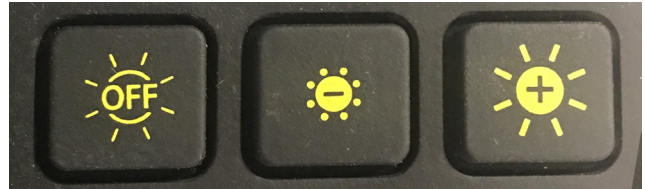
 NOTE: The lights on the M130 coiler are not adjustable.

HOW TO RECORD A BASIC SURVEY

1. Make sure the unit logo is displayed in the top right corner of the home screen.

2. To begin the basic survey, press the record button.

3. In basic survey mode, only the page of text overlay are available.

4. Pressing a number 1-9 displays that page of text onto the screen. Pressing 0 hides the pages. The currently displayed page number will be shows on the right side about the storage symbol and time.

5. To edit a page of text, press the number of the page followed by the text overlay button at the top of the keyboard.

6. When editing a page, use the arrow keys to move the cursor through the text for editing. Hold Shift and use the arrow keys to move the whole block of text around the screen.

7. The size and style of text can be edited as well. See **page 22, Survey Overlays** for detailed instructions.

8. When editing is complete, press OK to accept or Esc to cancel.

9. When recording, pressing the snapshot button at any time will store an image of the screen (jpeg).

10. When survey is complete, press the Stop button to send the survey.

Operating Instructions

HOW TO RECORD A MINASURVEY

1. Press the Mina key and select New Project (providing an empty site info form) or Existing Project (providing the last set of site info pre-loaded).

2. Enter the necessary information concerning the survey site which will later be displayed on the video recording and pdf survey report. Press the Mina key to save and move onto the next page or Esc to escape.

3. Enter the information about the current run. When this is complete, press the Mina key to save or Esc to cancel the changes and start again.

4. On completing this, Run Info can be edited by pressing the Mina key.

5. To begin capture, press the red circle button. The Run Info can no longer be edited once recording begins.

6. Select the start node or entry point where the survey will begin. The remarks section can be left blank or include descriptors like "manhole cover damage". It will ask for a snapshot of this point.

7. When recording, pressing the Snapshot button at any time will store a jpeg screen capture.

8. Text and graphics can also be overlaid into the video using the text overlay button. See **page 22, Survey Overlays** for detailed instructions on this.

9. When the survey is complete, press the Stop button to end the survey.

10. Choose end node type. Confirm the end node type and the pipe serviceability (one being completely blocked and five being completely clear).

11. A prompt will ask for a closing snapshot. The next display will tell you once the survey has been saved.

12. Pressing the Survey key again will allow a new section under the same project to be started or the project can be closed.

13. With the project open, the project can be exported to provide a Survey Report by pressing the Survey key and selecting "Export Project."

HOW TO RECORD A WINCAN SURVEY

(Only available with WinCan Activation.)

1. Press the WinCan button at the top of the keyboard and select "New Project."

2. Enter the project name and press the WinCan key to confirm.

3. Press the WinCan key again and select "New Section." Once all the required section information is entered (use page up/down to move between screens), press the WinCan key to confirm.

4. Press the Record button to start recording. Press the Snapshot button at any point to store a still image (jpeg).

5. When the survey is complete, press the Stop button or press the WinCan key and select "End Section" to stop recording and store the survey files.

6. With the project open, the project can be exported to provide a WinCan Report in the MiracullX format by pressing the WinCan key and selecting "Export Project."

7. When the survey is complete, press the Stop button to end the survey.

HOW TO ADD OBSERVATIONS TO A WINCAN SURVEY

1. While recording a WinCan survey, observations can be added.

2. Pressing the Snapshot button will automatically add a "General Photograph" observation to the survey.

3. If the observation code is known, press the WinCan key and select "Add by Code" and then enter the desired code. On a valid code being entered, the entry parameter entry menu will open.

4. If the code isn't known, press the WinCan key and select "Add Observation." Follow the on-screen prompts to find the code. Upon completion, the parameter entry menu will open.

5. One the parameter entry screen, any fields marked with (M) are mandatory and the menu will not display the "OK to Confirm" or allow the observation to be added until these fields contain valid data.

6. If data is entered in non-mandatory fields, it must be valid (i.e., clock points are numerical values from 1-12) or the "OK to Confirm" option will not be visible and the observation cannot be added until all entered data is valid.

7. The parameter entry can be cancelled by pressing the Esc key. This will cancel the observation.

8. Once parameter entry is complete and all data is valid, press OK to confirm. The option to add a Snapshot will then be displayed before completion.

9. If an observation is set as a Continuous Defect, it will be listed with its defect number and observation code in the Continuous Defects menu. To close a continuous defect, press the WinCan key from the main recording screen and select "Continuous Defects." Select the defect to close from the list of open defects. The defect will then be closed. On pressing stop or ending the section, all open Continuous Defects will be erased.

HOW TO CONNECT AN EXTERNAL DISPLAY

⚠️ **CAUTION:** Video display monitors are not generally rated for outdoor use or use in wet conditions. Only connect an external display monitor to the unit when used in a dry, indoor environment.

1. The video display must be enabled in the Settings menu. Go to the Settings menu and select General. Enable or disable the external screen. Select Save Settings and press OK.

2. Connect a VGA cable (15-way D-sub type) to the socket on the back of the unit.

3. Connect the other end of the cable to a suitable video display monitor.

4. Connect the monitor power supply and turn on the monitor. The monitor should now display a copy of the screen contents of the unit.
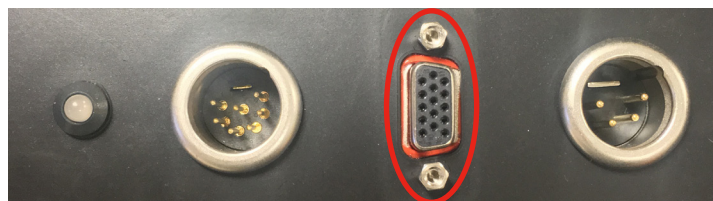
VGA Port
(15-Way D-Sub Type)

Operating Tips

- If you get stuck in a line, try to rotate the push-cable by hand, first clockwise, then counter-clockwise.

- The use of a lubricating agent on the push-cable itself can often increase the distance you are able to push the unit. Be certain to abide by all regulations regarding the use of oils (such as vegetable or mineral oils) or other lubricating additives down drain lines. Also, if a lubricating agent is being used, be sure to clean the push-cable before it is loaded back into the system.

- Consider using a water repellant (such as Rain-X®) on the camera lens if you are experiencing fogging or water spotting on the camera lens in wet lines.

- If glare appears in the pipe, reduce the light intensity.

The Spartan Explorer is designed for easy maintenance and trouble-free operation. Regular maintenance will prolong the life of the product. Follow these simple instructions:

• Do not store outdoors and do not allow the unit to sit for extended periods in a hot environment, such as a truck or automobile in bright sunlight.

• Do not store or allow the unit to sit in extreme cold conditions.

• Never operate in standing water.

• After each inspection, always wash camera head, flex-link, and push-cable.

• The connectors may accumulate dirt on the pins with prolonged system use. Use a cotton swab impregnated in a drop of standard alcohol to clean them. Normally a clean pin insterted in the receptacle will wipe the internal contact and make a good connection. If this does not suffice, a drop of alcohol can be inserted in the bad contact hole to clean it.

• Keep all connector threads clean to ensure proper tightness and mechanical connection.

• Inspect the clean push-cable for damage such as peel off, deep scratches, cracks, kinks, or any other signs of failure.

• Wipe the camera lens cover clean with a softso cloth. The cover is constructed of special scratch-resistant, high-impact sapphire, and provides maximum transparency under adverse inspection environment conditions.

CAUTION: Never use a damaged push-cable, even if the system appears to function properly. Even the smallest drop of water that penetrates will eventually corrode the wires and produce shorts and malfunctions. Do not use electrical of other type of tape to cover a crack or tear in any push-cable of this system.

Survey Overlays

When recording within a survey, text and graphics can be placed on top of the footage.

TEXT

- To place text, press the Overlay key (box with a pencil). Words can then be typed out.

- To change the style of the text, press the Overlay Style key, which will cycle through the available font colors.

- To change the size of the text, press the Overlay Size key, which will cycle through the three available font sizes.

- To change the position of the text, hold Shift and use the arrow keys.

- To save changes, press the OK key. To cancel, press Esc.

GRAPHICS

- To display graphics, press Ctrl+G. To cycle through the available graphics, press G.

- To move the graphic, use the arrow keys, or hold Shift and use the arrow keys for fine movements. Use the Style and Size keys to adjust the graphic.

- To save changes press, the OK key. To cancel, press Esc.

DATE AND TIME

- To show the Date or Time overlay, press Ctrl+D or Ctrl+T respectively.

- To move the overlay, use the arrow keys, or hold Shift and use the arrow keys for fine movements. Use the Style and Size keys to adjust the overlay.

- To save changes press, the OK key. To cancel, press Esc.

COUNTER

- Pressing the Footage Counter key allows the meterage to be overlaid.

- To move the overlay, use the arrow keys, or hold Shift and use the arrow keys for fine movements. Use the Style and Size keys to adjust the overlay.

- To save changes press, the OK key. To cancel, press Esc.

1. To view recorded videos and images, press the Report Viewer button.

2. To navigate, press OK or the right arrow key to step into a folder, or the left arrow key to step up a level. Choose between files/folders with the up and down arrow keys.

3. Select a storage location, a file folder, a date/time folder, and finally a file to view. On the file selection step, the right side of the screen should display the images/video snapshots as each file is selected.

4. To delete a site or survey, press the backspace key and confirm in the dialogue box.

5. To copy a site or survey, press Ctrl+C and confirm copy destination in the dialogue box.

Settings

Pressing the Settings button will bring up several options to customize the Explorer. Unless otherwise specified, to change these settings, navigate to the proper page, press the down arrow to select, and press the displayed letter to change a given setting. When done, press "Save Settings," or to cancel hit Esc.

COILER

• Change to a different meterage and/or system of units (imperial or metric).

• To manually input a coiler meterage, select "Manual" and then enter the meterage by navigating to the text box with the arrow keys and entering the length of the coiler.

TEXT AND GRAPHICS

• Change how long text/headers remain on screen, as well as the header that should display at the end of the video.

• To change the End of Video header, first enable, then navigate to each line and enter the desired text.

GENERAL SETTINGS

• Change the screen backlight (brightness), enable/disable the auto screen off feature, enable an external display, reset to factory settings, and check for a software update.

TIME AND DATE

• Change the system time/date and choose between 24-hour and 12-hour mode.

• To change the date or time, navigate to the corresponding box, and type the desired date or time. Alternatively, use the up and down arrows to select a number and the right and left arrows to choose which place to change.

WIFI

• Connect to available WiFi networks to allow wireless internet connectivity. (Alternatively, use the ethernet port on the front of the system for a wired connection.)

• To connect to WiFi, first allow the list of networks to load. Navigate to the desired network, select it, and select "Connect." Enter the password if necessary. It should move to the top of the list and say "Connected" if successful.

• To disconnect, navigate to the connected network, select it, and select "Disconnect."

CLOUD

• Connect to a WinCan web account to save files in the cloud.

• Enter the account username and password. Select "Test Connection" to ensure the account is successfully connected.

WINCAN

- Change the specification, text color, and time text should remain on screen. Also enable or disable stamp codes to video. The system must be rebooted before the changes will take effect.

- The WinCan Catalog Access Library version is also shown.

STATUS

- View the status of several aspects of hardware, for preventing and troubleshooting issues.

- Also view the system version, firmware version, and Unique Identifier (UID), and the registered serial number (S/N) and Organization.

Warranty

Spartan Tool warrants its equipment to be free from defects in material and workmanship for one year from the date of purchase. To obtain warranty service, a purchaser should notify Spartan Tool in writing, at the address provided below, within the warranty period, and Spartan Tool will direct where to take or send the equipment for service. If the defect is covered by the warranty, Spartan Tool will repair or replace, at its option, the defective equipment, without charge for labor or materials (freight and insurance are the purchaser's responsibility).

This warranty is limited to the original retail purchaser and is not transferable. Spartan Tool assumes no responsibility for damage due to accident, neglect, abuse, tampering or misuse, nor damage from repairs or alterations by others. This warranty does not cover damage to the equipment resulting from the use of replacement parts other than Spartan Tool parts.

Spartan Tool's sole obligation and the original purchaser's exclusive remedy under this warranty shall be for repair or replacement as described above. ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL SPARTAN TOOL BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES

Spartan Tool LLC
Niles, Michigan 49120

Spartan Tool LLC reserves the right to make changes at any time, without notice, to specifications and models and also discontinue models. The right is also reserved to change specifications or parts at any time without incurring any obligation to equip same on models manufactured prior to the date of change.

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