

SeeSnake® CS65



WARNING!

Read this manual carefully before using this tool. Failure to understand and follow the contents of this manual may result in electrical shock, fire, and/or serious injury.

SeeSnake® CS65

Serial
No.

Table of Contents

Introduction

Regulatory Statements	4
Safety Symbols	4

General Safety Rules

Work Area Safety	5
Electrical Safety	5
Personal Safety	6
Equipment Use and Care	6
Battery Use and Care	7

Pre-operation Inspection

Specific Safety Information

SeeSnake CS65 Safety	8
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Product Overview

Description	9
Specifications	10
Standard Equipment	10
Components	11
Keypad Overview	14
Keyboard Overview	16

Operating Instructions

Placement	18
Connecting to a Camera Reel	18
Powering the CS65	19
Inspection Overview	20
Integrated Counter	20
User Interface	21
Interface Icons	21
Open Jobs	22
Capturing Media	22
Taking Photos and PhotoTalk™	22
Recording Autolog Video	23
Recording Standard Video	24
Simul-Capture	24
Custom Overlay	25
Locating the Sonde	27
Line Tracing the Push Cable	27
Reviewing Jobs	28
Job Reports	28

Managing Jobs

Job List.....	32
USB Options	33
Syncing	33

System Settings

Microphone Default Settings.....	37
Restoring System Settings.....	37

Software

HQ Software	38
Updating CS65 Software	39

Maintenance and Support

Cleaning.....	40
Accessories	40
Transport and Storage	41
Service and Repair	41
Disposal	41
Battery Disposal.....	41
Troubleshooting.....	42

Appendices

Appendix A: Extreme Temperature Operation	43
Appendix B: Replacing the Internal Hard Drive.....	43
Appendix C: rM200 Docking System.....	44

Introduction

The warnings, cautions, and instructions discussed in this manual cannot cover all possible conditions and situations which may occur. It must be understood by the operator that common sense and caution are factors that cannot be built into this product, but must be supplied by the operator.

Regulatory Statements

CE The EC Declaration of Conformity (890-011-320.10) will accompany this manual as a separate booklet when required.

FCC This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Safety Symbols

In this manual and on the product, safety symbols and signal words are used to communicate important safety information. This section is provided to improve understanding of these signal words and symbols.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates information that relates to the protection of property.



This symbol means read the manual carefully before using the equipment. The manual contains important information on the safe and proper operation of the equipment.



This symbol means always wear safety glasses with side shields or goggles when handling or using this equipment to reduce the risk of eye injury.



This symbol indicates the risk of electrical shock.

General Safety Rules

⚠ WARNING



Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in electrical shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS!

Work Area Safety

- **Keep your work area clean and well lit.** Cluttered or dark areas invite accidents.
- **Do not operate equipment in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Equipment can create sparks which may ignite the dust or fumes.
- **Keep children and bystanders away while operating equipment.** Distractions can cause you to lose control.
- **Avoid traffic.** Pay attention to moving vehicles when using on or near roadways. Wear high-visibility clothing or reflector vests.

Electrical Safety

- **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges, and refrigerators.** There is an increased risk of electrical shock if your body is earthed or grounded.
- **Do not expose equipment to rain or wet conditions.** Water entering equipment will increase the risk of electrical shock.
- **Keep all electrical connections dry and off the ground.** Touching equipment or plugs with wet hands can increase the risk of electrical shock.
- **Do not abuse the cord.** Never use the cord for carrying, pulling, or unplugging the power tool. Keep cord away from heat, oil, sharp edges, and moving parts. Damaged or entangled cords increase the risk of electrical shock.
- **If operating equipment in a damp location is unavoidable, use a ground fault circuit interrupter (GFCI) protected supply.** Use of a GFCI reduces the risk of electrical shock.

Personal Safety

- **Stay alert, watch what you are doing, and use common sense when operating equipment.** Do not use equipment while you are tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating equipment may result in serious injury.
- **Dress properly.** Do not wear loose clothing or jewelry. Loose clothes, jewelry, and long hair can be caught in moving parts.
- **Practice good hygiene.** Use hot, soapy water to wash hands and other body parts exposed to drain contents after handling or using drain inspection equipment. To prevent contamination from toxic or infectious material, do not eat or smoke while operating or handling drain inspection equipment.
- **Always use appropriate personal protective equipment when handling and using equipment in drains.** Drains may contain chemicals, bacteria, and other substances that may be toxic, infectious, and cause burns or other issues. Appropriate personal protective equipment always includes safety glasses and may include a dust mask, hard hat, hearing protection, drain cleaning gloves or mitts, latex or rubber gloves, face shields, goggles, protective clothing, respirators, and steel toed, non-skid footwear.
- **If using drain cleaning equipment and drain inspection equipment at the same time, wear RIDGID drain cleaning gloves.** Never grasp the rotating drain cleaning cable with anything else, including other gloves or a rag which can become wrapped around the cable and cause hand injuries. Only wear latex or rubber gloves underneath RIDGID drain cleaner gloves. Do not use damaged drain cleaning gloves.

Equipment Use and Care

- **Do not force equipment.** Use the correct equipment for your application. The correct equipment does the job better and more safely.
- **Do not use equipment if the power switch does not turn it on and off.** Any equipment that cannot be controlled with the power switch is dangerous and must be repaired.
- **Disconnect the plug from the power source and/or the battery pack from the equipment before making adjustments, changing accessories, or storing.** Preventive safety measures reduce the risk of injury.
- **Store idle equipment out of the reach of children and do not allow persons unfamiliar with the equipment or these instructions to operate the equipment.** Equipment can be dangerous in the hands of untrained users.
- **Maintain equipment.** Check for misalignment or binding of moving parts, missing parts, breakage of parts, and any other condition that may affect the equipment's operation. If damaged, have the equipment repaired before use. Many accidents are caused by poorly maintained equipment.
- **Do not overreach.** Keep proper footing and balance at all times. This enables better control of the equipment in unexpected situations.
- **Use the equipment and accessories in accordance with these instructions; taking into account the working conditions and the work to be performed.** Use of the equipment for operations different from those intended can result in a hazardous situation.
- **Use only accessories that are recommended by the manufacturer for your equipment.** Accessories that may be suitable for one piece of equipment may become hazardous when used with other equipment.
- **Keep handles dry, clean, and free from oil and grease.** Clean handles give better control of the equipment.
- **Protect the LCD from impacts during use.** Impacts to the front of the LCD can cause glass breakage and complete failure of the display.

Battery Use and Care

- **Use equipment only with specifically designed battery packs.** Use of any other battery packs may create a risk of injury and/or fire.
- **Recharge only with the charger specified by the manufacturer.** A charger suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- **Do not cover charger while in use.** Proper ventilation is required for correct operation. Covering charger while in use could result in fire.
- **Use and store batteries and chargers in dry, appropriate temperature areas according to their documentation.** Extreme temperatures and moisture can damage batteries and result in leakage, electrical shock, fire or burns.
- **Do not probe the battery with conductive objects.** Shorting of battery terminals may cause sparks, burns, or electrical shock. When the battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or any other small metal object that can make a connection from one terminal to the other. Shorting the battery terminals may cause burns or a fire.
- **Under abusive conditions, liquid may eject from battery; avoid contact.** If contact occurs, flush with water. If liquid contacts eyes, seek medical help. Liquid ejected from the battery may cause irritation or burns.
- **Properly dispose of batteries.** Exposure to high temperatures can cause the batteries to explode; do not dispose of in a fire. Some countries have regulations concerning battery disposal. Follow all applicable regulations.

Pre-operation Inspection

⚠ WARNING



To reduce the risk of serious injury from electrical shock or other causes, and to prevent damage to your equipment, inspect all equipment and correct any problems before each use.

To inspect all equipment, follow these steps:

1. Power off your equipment.
2. Disconnect and inspect all cords, cables, and connectors for damage or modification.
3. Clean any dirt, oil, or other contamination from your equipment to ease inspection and to prevent it from slipping from your grip during transportation or use.
4. Inspect your equipment for any broken, worn, missing, misaligned, or binding parts, or any other condition which might prevent safe, normal operation.
5. Refer to the instructions for all other equipment to inspect and make sure it is in good, usable condition.
6. Check your work area for the following:
 - Adequate lighting.
 - The presence of flammable liquids, vapors, or dust that may ignite. If present, do not work in area until sources have been identified and corrected. The equipment is not explosion proof. Electrical connections can cause sparks.
 - A clear, level, stable, and dry place for the operator. Do not use the equipment while standing in water.
7. Examine the job to be done and determine the correct equipment for the task.
8. Observe the work area and erect barriers as necessary to keep bystanders away.

Specific Safety Information

⚠ WARNING



This section contains important safety information that is specific to the SeeSnake CS65. Read these precautions carefully before using the CS65 to reduce the risk of electrical shock, fire, and/or serious injury.

**SAVE ALL WARNINGS AND INSTRUCTIONS
FOR FUTURE REFERENCE!**

SeeSnake CS65 Safety

- **Read and understand this manual, the camera reel manual, and the instructions for any other equipment you are using before operating the equipment.** Failure to follow all instructions may result in property damage and/or serious injury. Keep this manual with the equipment for future use.
- **Operating the equipment while in water increases the risk of electrical shock.** Do not operate the CS65 if the operator or equipment are standing in water.
- **The battery shoe and other electrical equipment and connections are not waterproof.** Do not expose the equipment to wet locations.
- **Only power the CS65 with a compatible battery or a double insulated AC adapter.** The AC adapter is intended for indoor use only. When powered by a battery, protect the CS65 from exposure to weather.
- **The CS65 is not designed to provide high voltage protection and isolation.** Do not use where a danger of high voltage contact is present.
- **Do not expose the CS65 to mechanical shocks.** Exposure to mechanical shocks can damage equipment and increases the risk of serious injury.

Product Overview

Description

The SeeSnake CS65 digital reporting monitor gives you the flexibility needed to efficiently and effortlessly adapt your workflow to each individual job's needs. Everything about the CS65 is designed to make doing advanced pipe inspections faster, saving you time so you can get on to the next job.

With its factory installed, user-replaceable 1 TB hard drive and dual USB ports, you can record to multiple devices simultaneously, bypassing the extra steps of loading media and editing jobs on a PC after the fact. The CS65 automatically records all captured media to the primary storage device (the internal hard drive by default) ensuring that you always have a record of your inspections. With the CS65's dual recording capability you have a copy for yourself and up to 2 copies saved on USB drives to give to customers or import into the included HQ software. You can configure the CS65 to automatically sync media and job information to the USB drives in real time.



The CS65 is easy to use in even the most demanding work environments. The built-in, water-resistant, splash-proof keyboard means that, in addition to adding notes to image captures and video recordings, you can quickly enter your company's contact information, job location, and customer details into reports. Easily view captured media and reports on the CS65's 165 mm [6.5 in] daylight viewable screen. Execute more inspections in less time with one-touch recording and automatic report generation.

The CS65 generates professional, high-quality multimedia reports for every inspection, automatically, as media is captured, eliminating time consuming post processing.

While the CS65 can connect to any SeeSnake camera reel, it is designed to conveniently mount on the SeeSnake Max rM200 for easy, all-in-one transport.



HQ is software designed to streamline critical and routine updates which help improve and prolong the life of your equipment. HQ also gives you the ability to manage jobs and generate reports for customers.

The included 8 GB USB drive comes with HQ preloaded. Insert the USB drive into your PC to install HQ and sign up for the Equipment Locker.

Specifications	
Weight without Batteries	4.3 kg [9.5 lb]
Dimensions	
Depth	403 mm [15.9 in]
Width	311 mm [12.3 in]
Height	251 mm [9.9 in]
Power Source	18 V Li-Ion rechargeable battery or AC adapter
Power Rating	16-25 VDC, 30 W
Display	
Type	Color LCD
Size	165 mm [6.5 in]
Resolution	VGA 640 × 480 pixels
Brightness	500 cd/m ²
Media	
Standard video	MPEG4 (H.264) 30 FPS
Autolog video	MPEG4 (H.264) Highly compressed format using a space saving frame rate optimized for pipe inspections
Photo	JPG
PhotoTalk	MPEG4 (H.264) Single image with audio commentary
Audio	Integrated microphone and speaker

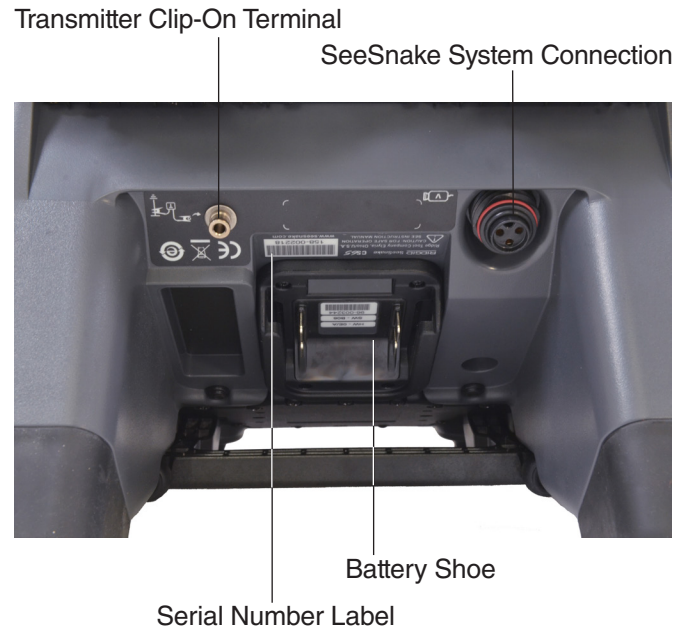
Specifications	
Transfer Method	2.0 USB
USB Ports	1 x 0.5 A (Port 1) 1 x 1.5 A (Port 2)
Internal Hard Drive	
Size	1 TB
Operating temperature*	5°C to 35°C [41°F to 95°F].
Storage temperature	-20°C to 65°C [-4°F to 149°F]
Operating Environment	
Temperature*	-10°C to 50°C [14°F to 122°F]
Storage temperature	-20°C to 60°C [-4°F to 140°F]
Relative humidity	5 to 95 percent
Altitude	4,000 m [13,120 ft]
*The AC adapter is rated for 0°C to 40°C [32°F to 104°F]. Using the AC adapter or internal hard drive may limit operation in extreme temperatures.	








Note: For more information on working in extreme temperatures, refer to Appendix A: Extreme Temperature Operation.

Standard Equipment

- SeeSnake CS65
- AC Adapter
- 8 GB USB Drive (with HQ preloaded)
- Operator's Manual
- Product Video

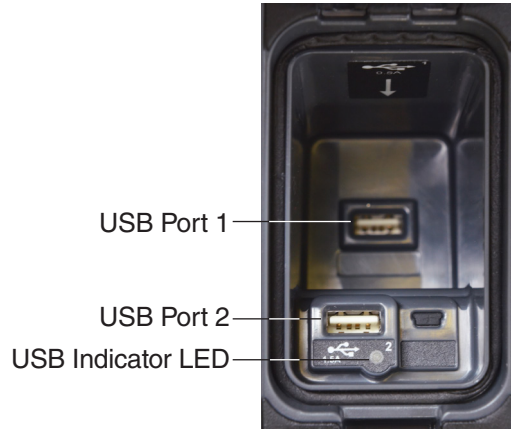
Components



Connection Graphics	
	Transmitter Clip-On Terminal
	USB Port 1
	USB Port 2
	Functional Earth
	SeeSnake System Connection
	Caps Lock Status LED
	Sleep Mode Status LED. Feature for future expansion; not available on this system.

USB Ports

The CS65 supports up to two USB drives so you can create two copies of a job at the same time; one for your records and one for your customer. Keep the USB port cover closed to protect the USB drives and USB port during inspections and transport.



Note: Both USB ports will accommodate most commonly used USB drives. If you are using a USB drive with higher power requirements, insert it into USB port 2.

Internal Hard Drive

By default, captured media automatically saves to the CS65's internal hard drive in real time. The 1 TB hard drive can store up to 1,000 hours of standard video recordings or up to 10,000 hours of Autolog video recordings plus thousands of photos.

The hard drive operates in temperatures ranging from 5°C to 35°C [41°F to 95°F] and has moving parts that can be damaged by rough handling or misuse. To prevent data loss, regularly backing up your jobs is recommended. Jobs can be synced and backed up to any inserted USB drives, or to another hard drive synced through USB port 2. For best results, use an AC adapter when copying lengthy jobs or large batches of jobs.

Note: Use of the internal hard drive may be limited when working in extreme temperatures. For more information, refer to Appendix A: Extreme Temperature Operation.

Kickstand

Unfold the kickstand for better viewing and stability as needed. The kickstand is also used for docking the CS65 to the rM200.



Note: To learn more about docking the CS65 on to the rM200, refer to Appendix C: rM200 Docking System.

Front Cover

The removable front cover protects the LCD screen, keyboard, keypad, and USB ports when closed. Open the cover for easy viewing or prop the cover halfway open to help reduce glare.



During transport, close the front cover completely to protect the LCD screen, keyboard, keypad, and USB ports.

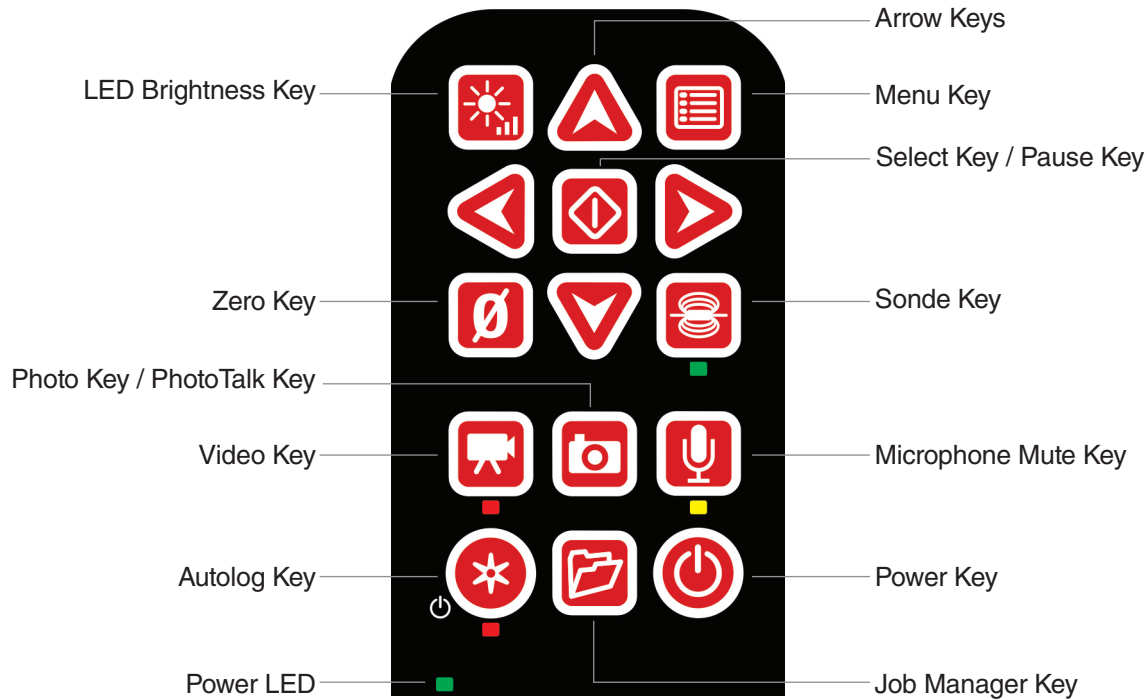
Removing the Front Cover










To remove the front cover, push the cover open until you feel resistance against the hinges. Continue to apply gentle but firm pressure until the cover snaps off.






To replace the front cover, make sure the grooves in the hinges are aligned with each other. Slide the cover into the grooves and then pull the cover down until it snaps back into place.

Keypad Overview



Keypad Keys and Functions		
	Power Key	Power the system on and off. The green LED lights up when the system is powered on.
	Select Key / Pause Key	Select highlighted items and apply changes. When recording standard video or Autolog video, press to pause and resume recording.
	Arrow Keys	Navigate through menus and screens and increase or decrease volume during playback.
	Menu Key	Open the menu to edit settings, reel options, LCD settings, time, date, region options, view battery, and other information. Press to exit out of tabs and screens.
	Photo Key / PhotoTalk Key	Take a photo. Photos can be taken anytime during standard video or Autolog video recording and while recording is stopped or paused. Long press (>3 seconds) to record a PhotoTalk still frame image with audio commentary.
	Video Key	Start and stop standard video recording. The red LED lights up when recording.
	Autolog Key	Start and stop Autolog video recording. Can also be used to quick-start an inspection. Do two things with one key press: power on the system and start recording Autolog video. Document an entire inspection with just one key press. The red LED lights up when recording.
	Job Manager Key	Open the Job Manager to view the job list, create a new job, preview an existing job, enter company information, or delete jobs from the USB drive. Access storage and formatting options, and add default inspector contact information.
	Microphone Mute Key	Enable or disable the microphone during recording and mute audio during video playback. The yellow LED lights up when recording.













Keypad Keys and Functions











	LED Brightness Key	Control the brightness of the LEDs in the camera. Press to cycle through brightness levels or press once and use the Arrow keys to increase or decrease the brightness.
	Sonde Key	Enable and disable the sonde. The green LED lights up when the sonde is enabled.
	Zero Key	Long press (>3 seconds) to set the system measurement to zero at the beginning of an inspection. Short press (<1 second) to start and stop temporary segment measurements. The temporary segment measurement appears in brackets.

Keyboard Overview

The built-in, water-resistant, splash-proof keyboard is one of the CS65's defining features. To help maximize your workflow, some keys perform multiple functions. A few keys perform the same function as keypad keys.



Keyboard Keys and Functions		
	New Job Key	Create and open a new job.
	Close Job Key	Close the open job.
	Edit Job Key	Open the Job review screen.
	Count Measurement Key	Toggle to show or hide the counter measurement display.
	Date/Time Key	Cycle the date/time display to show only the time, only the date, both, or neither.
	Image Flip Key	Rotate the image 180 degrees during live view. The rotated image appears in captured media.
	Full Screen Key	Feature for future expansion; not available on this system.
	LED Brightness Keys	Increase or decrease the brightness of the LEDs in the camera.
	Volume Keys	Increase or decrease volume during playback.
	Sleep Key	Feature for future expansion; not available on this system.
	Xmouse® Key	Feature for future expansion; not available on this system.
	Fault Tag Key	Feature for future expansion; not available on this system.

Keyboard Keys and Functions		
	Job Manager Key	Functions the same as the Job Manager key on the keypad.
	Text Key	Add and edit custom overlay text during live view. The text overlay appears in captured media.
	Menu Key	Functions the same as the Menu key on the keypad.
	Arrow Keys	Functions the same as the Arrow keys on the keypad.
	Play Key	Open the Job review screen to review captured media, playback videos, add notes, enter customer and job location information, and preview the report for the open job.
	Pause Key	Pause media during playback. Does not pause video or Autolog video recording.
	Fast Forward Key	Feature for future expansion; not available on this system.
	Rewind Key	Feature for future expansion; not available on this system.
	Enter Key	Functions the same as the Select key on the keypad.
	Escape Key	Clear custom overlay from live view and exit out of menus.

Operating Instructions

⚠ WARNING



Wear appropriate protective equipment such as latex or rubber gloves, goggles, face shields, and respirators when inspecting drains that might contain hazardous chemicals or bacteria. Always wear eye protection against dirt and other foreign objects.

Do not operate the CS65 if you or the equipment are standing in water. Operating the equipment while in water increases the risk of electrical shock. Rubber-soled, non-slip shoes can help prevent slipping and electrical shock on wet surfaces.

Placement

When arranging your equipment at a work site, position the CS65 so the keypad is easy to reach and the display faces away from direct sunlight. Place the SeeSnake camera reel near the pipe entrance to make it easier to manipulate the push cable while viewing the display. Make sure the CS65 and SeeSnake camera reel are stable.

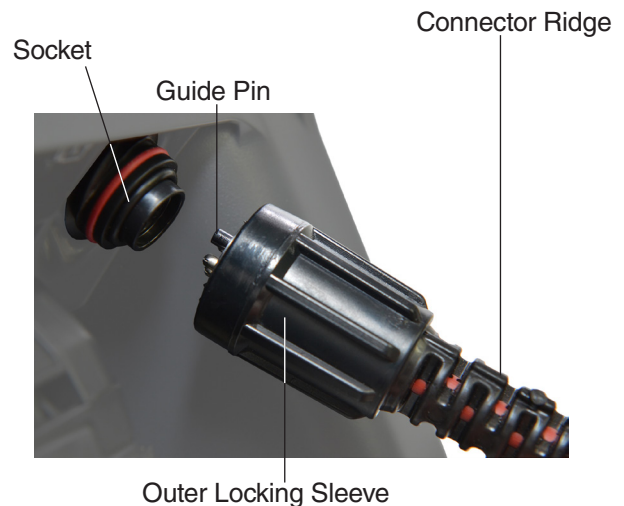
NOTICE When outdoors or in wet locations, use battery power only. Protect the battery from moisture.

Connecting to a Camera Reel

The CS65 can connect to any SeeSnake camera reel with the SeeSnake system cable.






1. Unwrap the system cable from the cable wraps.
2. Pull back the outer locking sleeve on the system cable connector.
3. Align the connector ridge and plastic guide pin with the socket and push the connector straight in.
4. Tighten the outer locking sleeve.

NOTICE Only twist the outer locking sleeve. To prevent damage to the pins, never bend or twist the connector.



5. Power on the system:
 - Press the Power key to power on the system.
 - Press the Autolog key to quick-start an inspection. Do two things with one key press: power on the system and start recording Autolog video.

Powering the CS65


Power Icons	
	The battery is fully charged.
	The battery is partially charged.
	The battery is low.
	Replace the battery.
	The AC adapter is connected.

18 V Li-Ion Rechargeable Battery

⚠ WARNING

Only use the CS65 with a compatible battery. Use of any other batteries may create a risk of fire and/or injury.

The CS65 is powered by a compatible 18 V Li-Ion rechargeable battery. Slide the battery into the battery shoe and lock into place.

To prevent data loss when the low battery warning displays and the battery icon flashes, stop any in-progress recordings and power off the system as soon as the check mark  displays. Resume use after the battery has been recharged or replaced.

When the battery reaches a critical level, the system stops any in-progress recordings and powers off. Data may be lost. Resume use after the battery has been recharged or replaced.

Run time will vary according to battery capacity and use.

NOTICE Observe your battery's charge status closely. Using a battery with an extremely low charge may result in unexpected power loss, which may result in data loss and corruption.

AC Adapter

⚠ WARNING





The AC adapter is not waterproof and is intended for indoor use only. To prevent electrical shock do not power the CS65 with an AC adapter outdoors or in wet locations.

The CS65 can be powered with an AC adapter. Slide the AC adapter into the battery shoe and lock into place. For best results, use an AC adapter when copying lengthy jobs or large batches of jobs.



Inspection Overview

The SeeSnake CS65 can be used for basic or advanced pipe inspections. To perform a basic inspection, connect the CS65 to a SeeSnake camera reel, power on the system, push the push cable through the pipe, and observe the display. An advanced inspection additionally involves capturing media and delivering reports to your customer.


1. Place the SeeSnake camera reel and the CS65 near the pipe entrance.
2. Connect the CS65 to the camera reel with the system cable.
3. Press the Power key  to power on the system. Alternatively, insert a USB drive into the monitor's USB port and press the Autolog key  to quick-start the inspection.
4. Carefully put the camera into the pipe. Protect the push cable from sharp edges at the pipe entrance.
5. Push the camera through the pipe and observe the display.
6. Advanced Options:
 - Set the system zero point, or take a temporary segment distance measurement.
 - Capture media.
 - Add custom overlay.
 - Locate an inspection point or path.
 - Review the job, playback captured media, and preview the report.
 - Sync to multiple USB drives
7. Deliver the USB drive directly to your customer or insert the USB drive into your computer to edit in HQ.

Integrated Counter



All SeeSnake MAX camera reels and many original SeeSnake camera reels come equipped with an integrated counter. The integrated counter measures the total length of the extended push cable, or system measurement.

The integrated counter can also be used to measure a segment from a temporary zero point, such as a pipe head or joint, while still keeping track of the system measurement.


System Measurement

Set the system starting zero point wherever you want your inspection measurement to begin. This may be at the pipe entrance or it may be farther down the line. **Long press (>3 seconds) the Zero key  to set the system measurement to zero.**

Temporary Segment Measurement











To measure a temporary segment distance during an inspection, short press (<1 second) the Zero key  to set a temporary zero point. The temporary zero point is indicated with brackets. To clear the temporary segment measurement and return to the system measurement, press the Zero key  again.

Measurement Display

The system measurement displays in the bottom left corner of the screen. A temporary segment measurement is represented by brackets. Press the Count Measurement key  to toggle between showing and hiding the system measurement on screen. Measurement is recorded and appears in reports whether it is shown or hidden on the display.

0 cm	Inspection start point. System measurement is set to zero.
2.89m	Distance from system zero start point.
[0 cm]	Temporary segment measurement start point.
[81 cm]	Distance from temporary zero start point.
3.70m	Return to system measurement. Total distance from system zero start point, including temporary segment measurement.

User Interface

Interface Icons	
	A USB drive is inserted. The bar below the USB drive icon indicates the remaining capacity on the USB drive.
	The bar below the hard drive icon indicates the remaining capacity on the hard drive.
	Captured media is actively being written to the USB drive or hard drive. The percentage shown represents how much of the captured media has been written. In this example, 99 percent of the captures have been saved to the USB drive. Do not remove the USB drive.
	Captured media is being processed and saved to the USB drive. Do not remove the USB drive.
	Processing is complete and all the media has been saved. It is safe to remove the USB drive.
	Processing is complete and all the media has been saved to the internal hard drive.
	An error has occurred while syncing. Retry syncing the job.
	A star in the left corner of a storage device icon identifies the primary storage device.
	A job is open.
	The live view image is flipped.

NOTICE Premature removal of the USB drive may result in data loss and corruption.

Open Jobs

Media is saved to the open job as it is captured. By opening a job you can preview reports, leave notes, or capture new media to an existing job. Only one job can be open at a time. Jobs can be reopened and added to later.





Capturing Media


The CS65 has a 1 TB internal hard drive. Save jobs and their captured media and reports to the hard drive, or sync with up to two USB drives. Media automatically saves to the open job as it is captured, continuously throughout the inspection. The CS65 automatically generates a report of the job which includes captured media, company and customer information, and notes.

The open job and captured media automatically save to the primary storage device. You can set primary storage preferences in the Job Manager.


Note: For more information on setting your primary storage device, refer to the Storage Settings section.



Taking Photos and PhotoTalk™

Press the Photo key  to take a photo. The photo icon  displays briefly and the photo is automatically saved to the open job.

The CS65 is the first digital recording monitor to offer PhotoTalk. This new feature offers the option of combining audio commentary with a photo to create email-ready files after uploading into HQ. This format enables you to provide a brief inspection diagnosis accompanying a photo. To record a PhotoTalk, long press (>3 seconds) the Photo key .



Audio recording begins when the PhotoTalk screen appears. Observe the 90 second countdown ring around the microphone icon to see how long you have been recording. To record less than 90 seconds, press the Select key  to stop recording, save, and return to live view.


You can set PhotoTalk as the default function of the Photo key . To change the default, go to User profile settings in the menu. Highlight Photo key action and press the Select key  to toggle between Photo and PhotoTalk.





About Autolog Video




Autolog videos are made of continuous audio recording and variable frame rate compressed video. The video compression rate of Autolog video is approximately one-tenth the size of standard video recording. Autolog video looks similar to standard video recordings but achieves a much higher compression level (lower file size) by capitalizing on the static nature of pipe inspection video and updating the image more slowly when the camera is not moving.




When the camera is moving through the pipe, Autolog video records five images per second to provide context. When the camera stops moving, Autolog video records one image every five seconds.


The substantial decrease in file size, compared to traditional video recording, makes storage and transfer of files easier and less expensive. The Autolog key  can be used to quick-start an inspection. Press it when the system is off and it will power on the unit, create a new job, and start an Autolog video recording. With Autolog video you can record the entire pipe inspection in a small file format while recording video and taking pictures.

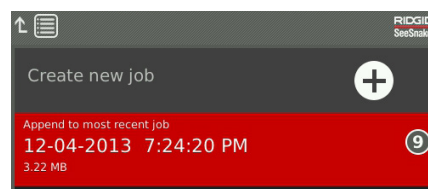
Recording Autolog Video


Press the Autolog key  to start and stop recording Autolog video. When Autolog video is recording, the LED below the key is lit and a red Autolog video icon  displays.

Pause the Autolog video recording by pressing the Select key . When the Autolog video recording is paused the red Autolog video icon changes to a black Autolog video pause icon . Resume Autolog video recording by pressing the Select key  again.



To stop an Autolog video recording, press the Autolog key . The black Autolog video icon  indicates that the Autolog video recording is stopping and processing. Wait for a moment while the recording is processed and saved to the open job. The check mark  means the recording has been successfully processed and saved.




Use Autolog video recording to quick-start an inspection. When the system is off, press the Autolog key  to power on and automatically begin recording Autolog video. When prompted, choose Create new job or Append to most recent job.






Note: You cannot power off the system by pressing the Autolog key .

Recording Standard Video





Press the Video key  to start and stop recording video. When video is recording, the LED below the key is lit and a red video icon  displays.


Pause the video recording by pressing the Select key . When the video recording is paused, the red video icon changes to a black video pause icon . Resume video recording by pressing the Select key  again.




To stop a video recording press the Video key . The black video icon  indicates that the video recording is stopping and processing. Wait for a moment while the recording processes and saves to the open job. The check mark  means the recording has been successfully processed and saved to the USB drive.

Note: The size and quality of standard video can be adjusted. For more information, refer to the System Settings section.


Recording Audio

Press the Microphone Mute key  to enable or disable audio recording or to mute audio during playback. When the microphone is enabled, the LED below the key is lit, and the microphone icon is yellow . When video is recording and the microphone is enabled, the microphone icon is red . The microphone icon is gray  when the microphone is disabled.

By default, the microphone is enabled and audio records continuously during both Autolog video and video recording so your narrations are intact and uninterrupted. When standard video or Autolog video recording is paused, audio is also paused. To resume recording, press the Select key .



During playback, press the Up and Down Arrow keys   to adjust the volume of the recorded audio or mute it by pressing the Microphone Mute key .

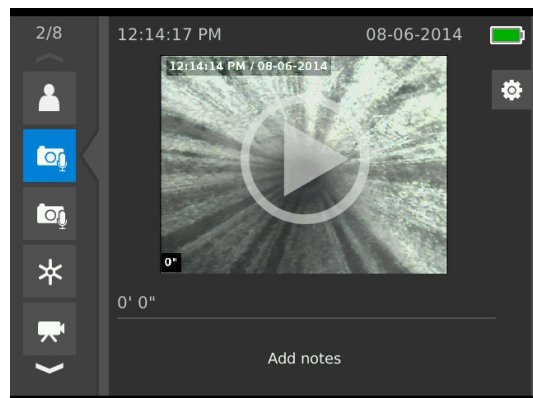
Simul-Capture

Standard video and Autolog video can be recorded simultaneously and independently of each other. Both recording types can be started and stopped without affecting the other. Pausing will affect both recording types. Photos and PhotoTalks can be taken during video and Autolog video recording. Pressing the Select key  to stop a PhotoTalk will not pause any in-progress standard video or Autolog video recordings.







Reviewing Recent Captures

Press the Play key  to open the Job Review screen and view the most recent capture. Use this key to playback a standard video or Autolog video recording. From the job review screen you can review all the captured media for the open job and access the report preview. Press the Menu key  to exit and return to live view.



Overlay Details

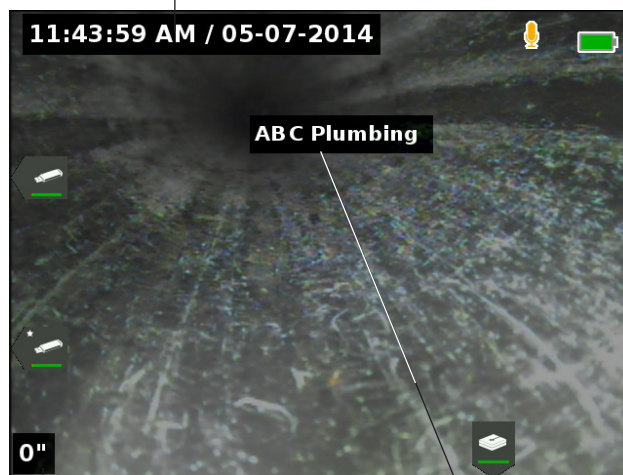
Overlay details include the date and time of the inspection and the count measurement. You can choose when and how these details are displayed on screen and in media. To customize which details are visible during inspections, press the Menu key  and navigate to the reel options tab . Highlight Overlay and press the Right Arrow key  to cycle through the options. Date, time, and count measurement information is always saved when media is captured, even when not displayed.

Overlay Details	
Display Only	Displays the date, time, and count measurement, but does not record on media. Adjust text size by pressing the Arrow keys  .
Video	Displays the date, time, and count measurement, and records them to media. Text size is preset for this mode.
Reel	Displays overlay entered on the drum keypad of the connected reel. Text size is preset for this mode.
Off	The date, time, and count measurement are not displayed or recorded. The details are still stored in the job data and will appear in HQ during playback.

Custom Overlay




You can use custom overlay to advertise your company's name, note a job location, or put other custom text. Custom overlay text is visible in live view and is burned onto captured media. The custom overlay appears on captured media until cleared.

Date/Time Overlay




Count Overlay

Custom Overlay




Custom Overlay Icons		
	Move	Adjust the position of the text box.
	Save	Save text so that it appears in all media.
	Discard	Discard changes and exit.

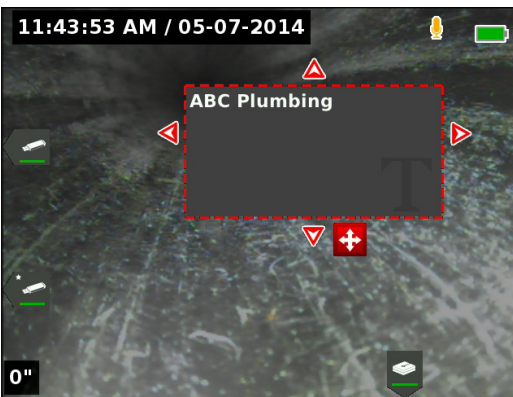
Some SeeSnake camera reels are equipped with a counter that generates text which can be superimposed onto the camera image. Titles generated using the reel's counter keypad are independent from the CS65. You cannot edit or remove on screen text created by the CS65 keypad with the reel's counter keypad. It is recommended to leave the reel counter overlay off.



Adding Custom Overlay

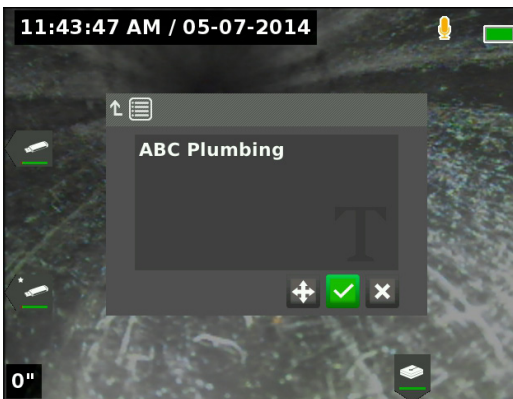
1. Press the Text key  to open the text box and enter your text.





2. You can reposition the text wherever you want it by highlighting and selecting the move icon . Press the Arrow keys  to move the text box and press the Select key  to save the placement.

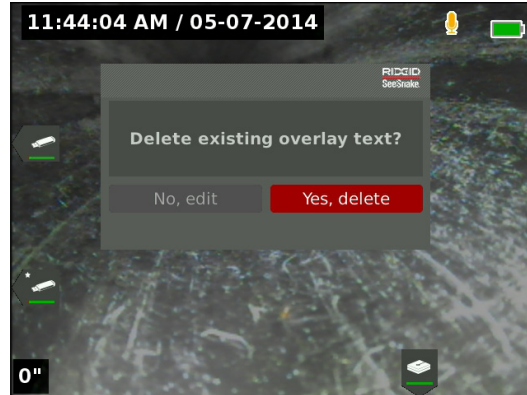


3. Highlight the save icon  and press the Select key  to superimpose the text onto the video image and exit back to live view.





Delete or Edit Custom Overlay

To delete or edit existing overlay text, press the Text key , highlight either Yes, delete or No, edit, and press the Select key . Press the Escape key ^{Esc} to delete custom overlay.



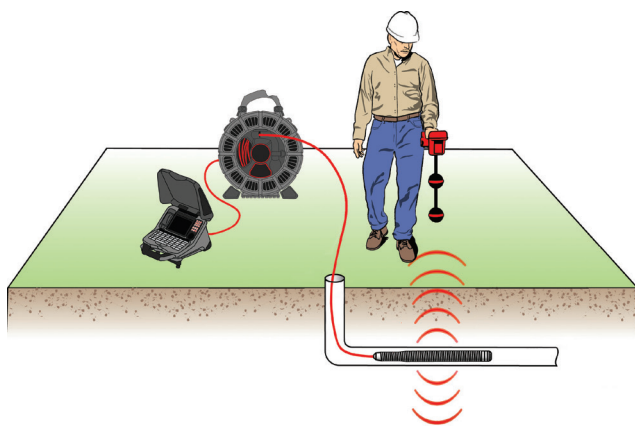
Locating the Sonde



Many SeeSnake camera reels have an integrated sonde which you can use to locate a point of interest in the pipe. The sonde is located in the spring and is assembled between the end of the push cable and the camera. The sonde transmits a locatable 512 Hz signal that can be detected by receivers such as the RIDGID SeekTech SR-20, SR-24, SR-60, Scout™, or NaviTrack® II.

Press the Sonde key  to enable or disable the sonde. When the sonde is enabled, the LED by the key is lit and the sonde icon  displays. The 512 Hz sonde signal can cause interference lines that may be visible on captured media.

To locate the sonde, follow these steps:

1. Power on the receiver and set it to sonde mode.
2. Locate the sonde's general direction so you know which way the pipe goes:
 - Enable the sonde and push the push cable no more than 5 m [15 ft] into the pipe.
 - Sweep the horizon with the receiver in a slow arc.
3. The signal strength is highest where the receiver detects the sonde.



You can set the sonde to always be enabled or disabled by default. In the menu, go to the Reel options tab  and highlight Sonde default. Press the Select key  to toggle on and off.

Note: For additional instructions on sonde locating, refer to the manual for the receiver model you are using.

Line Tracing the Push Cable

You can locate the path of a pipe by line tracing the push cable. This is especially useful for inspecting non-metallic or non-conductive pipes. Line trace the push cable by using a transmitter to induce current onto the push cable. For best results, use frequencies 33 kHz and higher.

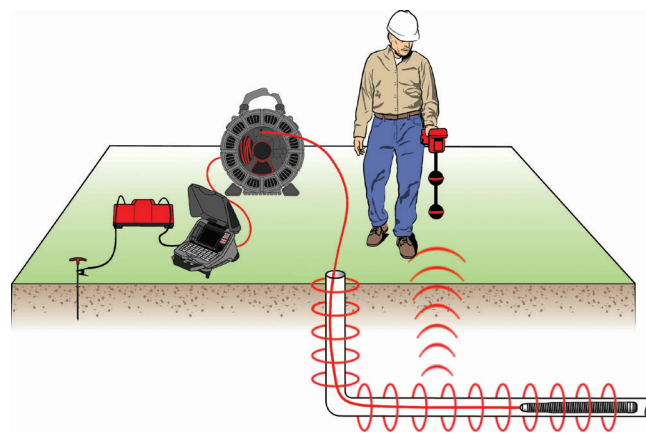
Note: The CS65 must be powered on and connected to a SeeSnake camera reel and a transmitter to line trace the push cable.

To line trace the push cable, follow these steps:

1. Push the transmitter's ground stake into the ground and clip one of the transmitter's leads to it.
2. Clip the other lead to the transmitter clip-on terminal on the back of the CS65.



3. Power on the transmitter and set your desired frequency. Power on the receiver and set it to the same frequency as the transmitter.
4. Trace the line.





Note: For additional instructions on line tracing, refer to the manuals for the transmitter and receiver models you are using.

Reviewing Jobs

Job Reports










One of the most valuable features of the CS65 is the ability to automatically build comprehensive, professionally formatted reports as you work, making it quick and easy to deliver reports to customers. Reports greatly enhance the way you communicate the results of your inspections with customers. In many cases you can hand your customer a USB drive containing a report before leaving the job site, eliminating the time and effort of post editing a report.

You can deliver reports without editing in HQ. It is a good idea to preview the report before delivering to a customer. You can do this on the CS65 or on a computer. On a computer, the report opens in a web browser. An Internet connection is not necessary to view the report.


Press the Play key  or navigate through the Job list by pressing the Job Manager key  to open the job review screen. During an inspection, the job review screen opens onto the most recently captured media. You cannot view active recordings in progress.




From the job review screen you can view and edit the open job's captured media, add text notes to individual captures, choose which captures to include in the report, enter customer information, and preview the report.

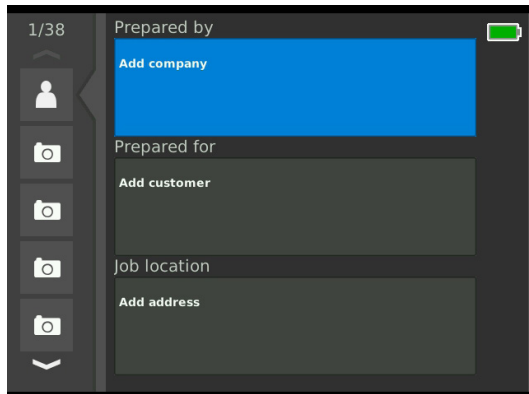
Job reports can be transferred as html files straight from CS65 or HQ. From HQ you may also export job reports as PDFs or burn them onto DVDs.


Job Review Tabs		
	Contact	Enter company information, customer information, and job location details.
	Photo	View and add notes to photos.
	PhotoTalk	View photo, listen to audio commentary, and add notes to PhotoTalks.
	Video	Playback and add notes to videos.
	Autolog Video	Playback and add notes to Autolog videos
	Notes	A text bubble indicates that a note has been added to this capture.
	Excluded Media	This individual capture is marked as excluded and will not appear in the report but is still part of the job and present on the inserted USB drive.
	Report Information	View media statistics such as photo count, video count, and Autolog video count. View whether contact information was entered into report. Go to this tab to preview the job report.
	Recording	The red dot means a recording is in progress. You cannot playback standard videos or Autolog videos during recording.

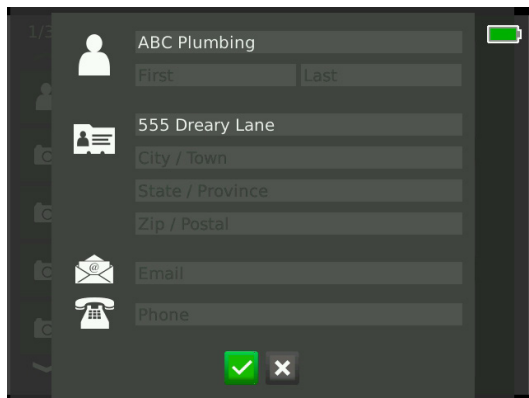
Entering Job Details




You can add your company's information, customer information, and the job location in the contact tab , at the top of the job review screen. The information entered here is embedded in the job and appears in the report.

1. Press the Play key  and navigate to the contact tab .
2. Highlight the subject you want to enter information for and press the Select key  to open the text form.



3. Highlight the field you want to edit and press the Select key  to open the text box and enter your text.

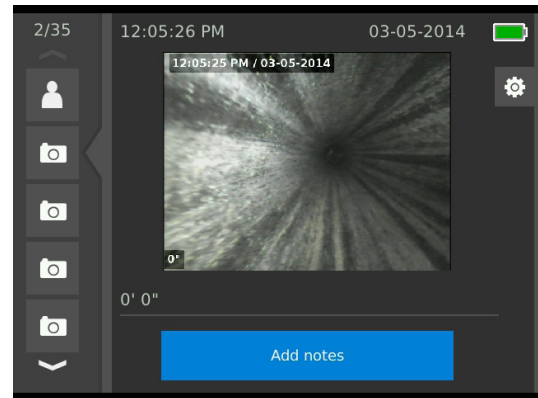






4. Repeat for other fields and, when done, highlight the save icon  and press the Select key  to save and return to the contact tab .

Adding Notes to Media

You can add notes to individual captures (photos, PhotoTalks, standard videos, or Autolog videos) from the job review screen.



1. Navigate to the capture you want to add a note to and highlight Add notes.

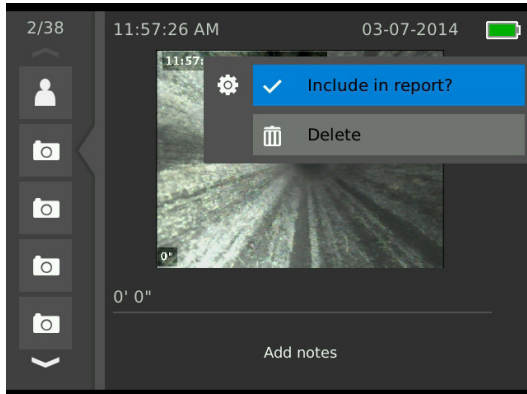






2. Press the Select key  to open the text box and enter your text.
3. To save the note, highlight the save icon . To discard the note, highlight the discard icon .
4. Press the Select key .

Excluding Media

By default, all captured media is included in the job report. If desired, you can mark specific captures to be excluded from the report without deleting them from the job permanently. This keeps the media on the USB drive but omits it from your report.



1. Navigate to the media you want to exclude from the report and highlight the settings icon .
2. Press the Select key .

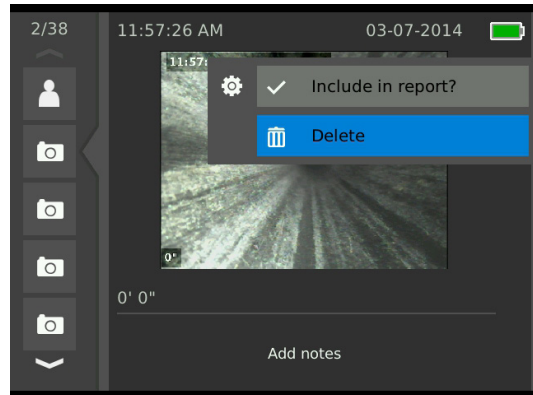





3. Press the Select key  to toggle between include  and exclude .
4. Press the Menu key  to exit.

Deleting Media

Deleting media from the job review screen permanently deletes it from the job.



1. Navigate to the media you want to delete from the job and highlight the settings icon .
2. Press the Select key .

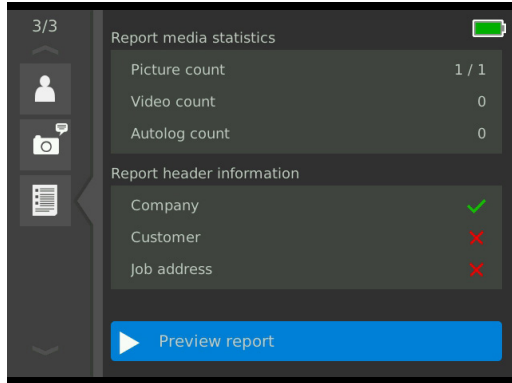



3. Highlight the delete icon  and press the Select key .
4. Press the Menu key  to exit.

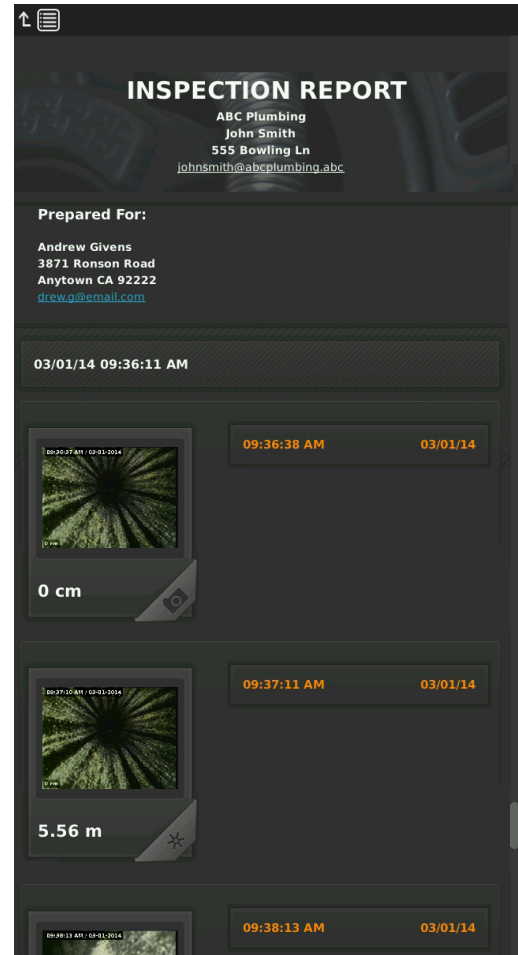
Previewing the Report

You can preview the job report from the job review screen.

1. Navigate to the report information tab  at the bottom of the job review screen.
2. Highlight Preview report and press the Select key .









3. Press the Arrow keys  to scroll through the report preview.




4. Press the Menu key  to exit.

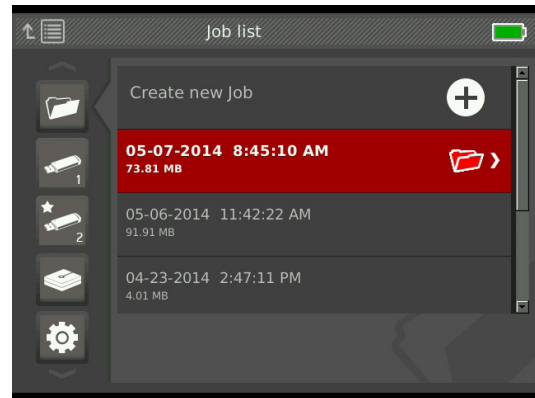
Managing Jobs

All jobs saved on the USB drives or internal hard drive are listed in the Job Manager. Press the Job Manager key  to access the following tabs: Job list, USB 1 options, USB 2 options, Internal HDD options, and Job settings.


Job Manager Tabs	
 Job List	Contains a list of all the jobs on the primary storage device. Create new jobs or open and close jobs. Preview the open job or change which job is open.
 USB 1 Options	Permanently delete all jobs from the first USB drive, or sync all jobs from the internal hard drive.
 USB 2 Options	Permanently delete all jobs from the second USB drive, or sync all jobs from the internal hard drive.
 Internal HDD Options	Contains a list of all the jobs on the internal hard drive and displays the remaining space available. Permanently delete all jobs from the internal hard drive.
 Job Settings	Add your company information and choose to have it automatically entered in reports. Set primary storage and sync preferences.

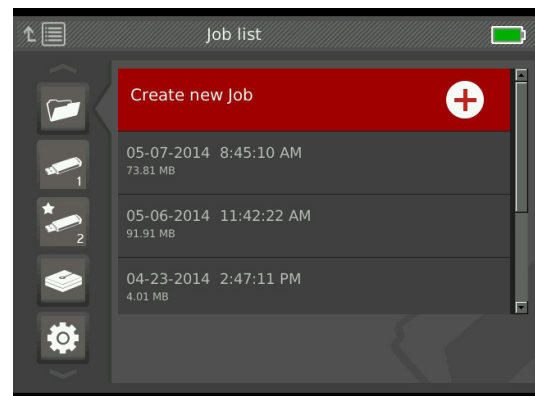
Job List

Media is saved automatically to the open job as it is captured, continuously throughout the inspection. When a job is open, the open job icon  is visible in live view and in the job list.



Creating a New Job

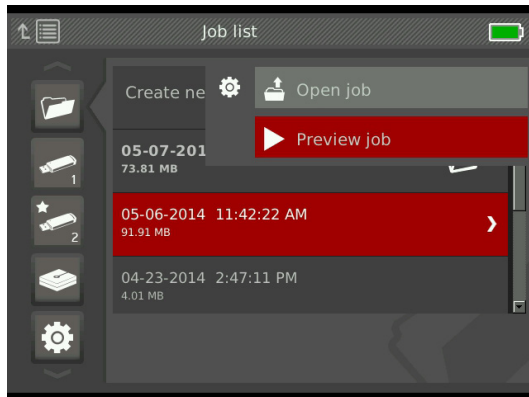
To create a new job, press the New Job key . New jobs are saved automatically and are named according to the date and time the job was created. When a new job is created, it becomes the open job.



Opening or Previewing a Job

To open or preview jobs stored on the primary storage device, press the Play key **▶**. Highlight the job you want to preview or open, and press the Select key **ⓧ**.

- Open job saves newly captured media to the highlighted job.
- Preview job opens the job review screen and displays all recorded media and any job or customer information that has been entered. You can also add and edit customer and job information in the job review screen.



*Note: If a job is already open, you can close the job from this menu or press the Close Job key **ⓧ**.*

USB Options

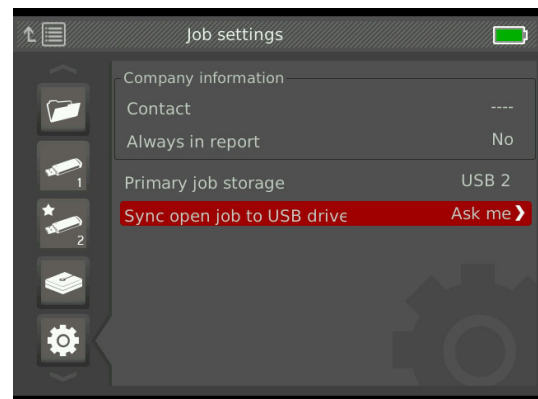
The USB options tabs show the amount of space available on the inserted USB drives. The red section of the bar represents the amount of data already on the USB drive and the green section indicates how much space is available. The check mark **✓** means that it is safe to remove the USB drive.

NOTICE Premature removal of a USB drive may result in data loss and corruption. The USB indicator LED flashes when data is being written.

Syncing

Syncing copies the open job to inserted USB drives exactly as it is saved on the primary storage device. Newly captured media is synced in real time to both the primary storage device and inserted USB drives ensuring that you have a backup copy for your files or to give to customers. The system can be set to automatically sync jobs, never sync jobs, or ask to sync each time a new job is opened. To sync a previously created job, set it as the open job.






Set your syncing preferences in Job settings tab **⚙**. Highlight Sync open job to USB drive and press the Select key **ⓧ** to cycle through Always sync, Never sync, or Ask me.




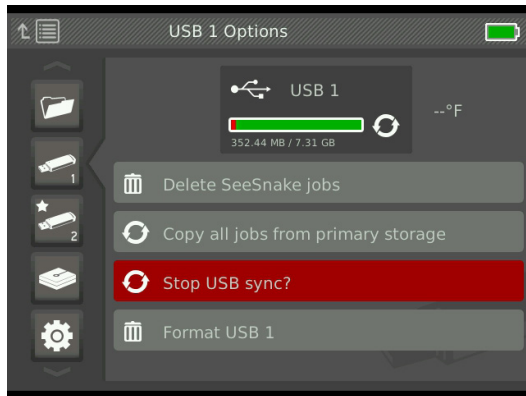
Syncing Jobs

When Ask me is selected, you will be asked each time a new job is created if you want to sync the job or not.


If the open job is not synced to a USB drive at the beginning of the inspection, you can sync it mid-inspection.

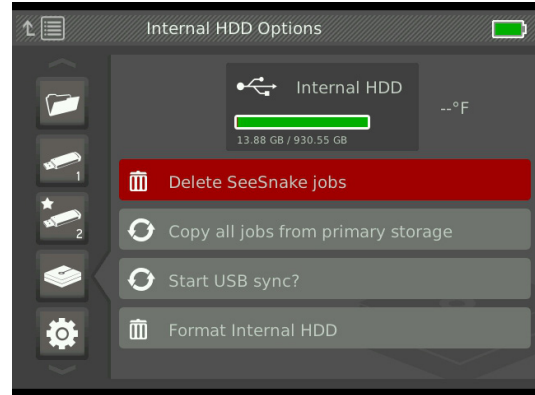
1. Press the Job Manager key  to open the Job list tab .
2. Navigate to the tab for the USB drive you want to sync the open job with.
3. Highlight Start USB sync and press the Select key . The sync icon  displays next to the color bar when that USB drive is syncing. A check mark  indicates that syncing is complete.

To stop a USB drive from syncing, navigate to the USB drive's tab in the job manager and highlight Stop USB sync. Press the Select key  to confirm.




Deleting Jobs

To permanently delete all the jobs from a USB drive or the internal hard drive, navigate to the tab of the storage device you want to clear. Highlight Delete SeeSnake jobs, and press the Select key .



Note: You can only delete all jobs on the USB drives or the internal hard drive, not individual jobs. To delete specific jobs, view the USB drive in HQ.

Copy All Jobs

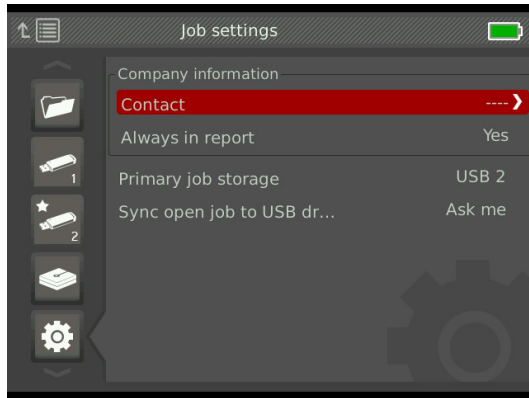
To copy all the jobs on the internal hard drive to a USB drive, navigate to the USB drive you want to copy to, highlight Copy all jobs from primary storage, and press the Select key . The system will alert you if there is not enough space on the selected USB drive.


Note: You can only copy all jobs to the USB drives, not individual jobs.

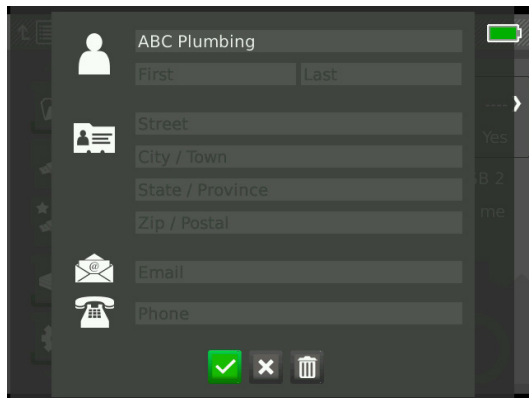
Job Settings




You can add your company information and choose whether the information appears in the job report header by default.

1. Navigate to the Job settings tab , highlight Contact, and press the Select key .






2. Highlight the field you want to edit and press the Select key  to open the text box and enter your text.

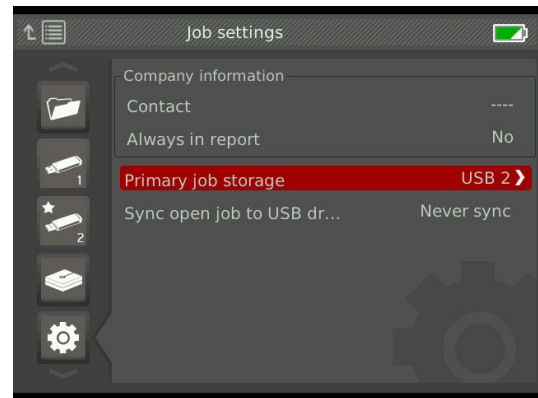



3. Repeat for other fields and, when done, highlight the save icon  and press the Select key .
4. To make this information appear automatically in the report header, highlight Always in report and press the Select key  to toggle between Yes and No.

Storage Settings

You can set the system's job storage preferences so that captured media saves to the internal hard drive or an inserted USB drive by default.

1. Press the Job Manager key  to open the Job list tab.
2. Navigate to the Job settings tab , and highlight Primary job storage.
3. Press the Select key  to cycle through Internal HDD, USB 1, or USB 2.





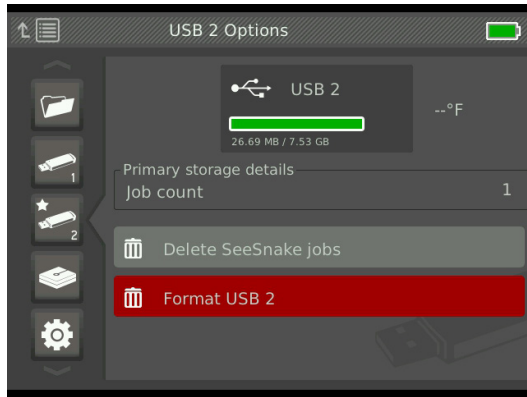
View the amount of space available on the internal hard drive by navigating to the Internal HDD options tab .

NOTICE The hard drive has moving parts that can be damaged by rough handling or misuse. To prevent data loss, back up your jobs regularly.

Formatting

A USB drive or the internal hard drive can be formatted so the drive will be properly configured for use with the CS65.

1. Press the Job Manager key  to open the Job list tab.
2. Navigate to the tab for the USB drive or internal hard drive you want to format.
3. Highlight Format and press the Select key .



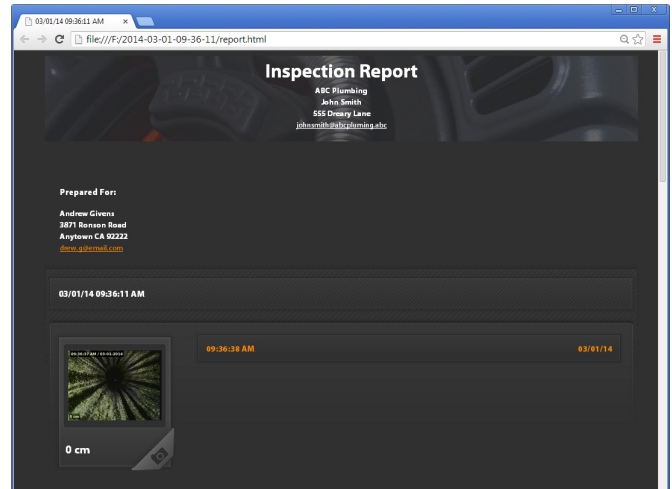
NOTICE Formatting permanently deletes any existing data on the USB drive or hard drive.

Delivering Reports

When delivering reports without editing in HQ, you can see a preview of the report on the CS65 or view it using a web browser on a computer before giving the USB drive to your customer.

To view a report on your computer, follow these steps:

1. Insert the USB drive into a computer.
2. Open the file named “report.html.”
















Note: The report opens in a web browser. An Internet connection is not necessary to view the report.

3. Click on captured media to view full size photos and to playback video and Autolog video.
4. Safely eject the USB drive from the computer.



To further customize the report or make additional edits, insert the USB drive into a computer that has HQ installed. HQ automatically imports jobs from the USB drive.

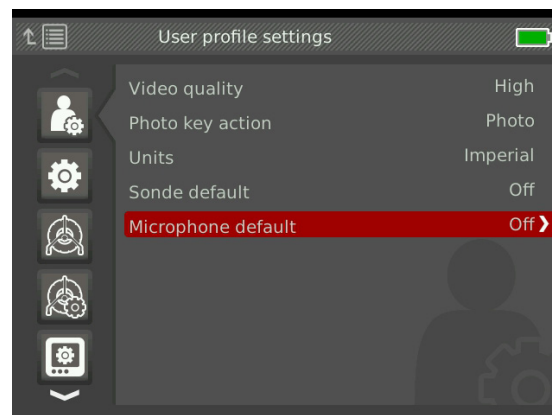
System Settings

Press the Menu key  to access the menu tabs and edit settings. Press the Arrow keys  and Select key  to navigate through the tabs, make selections, and to apply changes. Press the Menu key  to exit.



Menu Tabs		
	User Profile Settings	Set and store video quality, unit measurement, microphone, photo key, and sonde default preferences for future use.
	CS65 Settings	Adjust speaker volume and tone and keyboard settings.
	Reel Options	Set when and how overlay details are displayed, measurement units, and default sonde settings.
	Camera Settings	Adjust hue, brightness, contrast, and saturation to set how visual media will record.
	LCD Settings	Adjust LCD display brightness and contrast. These adjustments affect LCD viewing only; they do not apply to recorded media.
	Date/Time	Modify the date and time.
	Battery Info	Depending on your battery, view battery type, serial number, voltage sense information, temperature, current sense, and power.
	Region Options	Change language and other locale specific settings.
	About	View software version information and restore system settings.

Microphone Default Settings

To change the microphone default, navigate to the User profile settings tab . Highlight Microphone default and press the Select key  to toggle between On and Off.



Restoring System Settings

To restore system settings back to the factory default, navigate to the About tab  , highlight Restore system settings, and press the Select key .



Software

Critical and routine software updates for the CS65 are released through HQ. You must register your CS65 in HQ's Equipment Locker to receive updates.

Software Support

For software support, please

- Visit www.hq.ridgid.com.
- Email hqsupport@seesnake.com.
- Call toll free 888-477-5339.

HQ Software



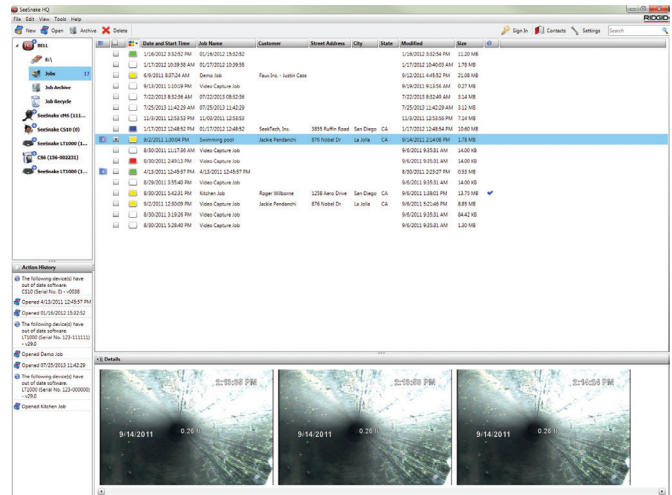
HQ software streamlines critical and routine updates for your SeeSnake monitor. Critical updates improve security, long-term reliability, and add new features. Staying up to date with HQ software prolongs and improves the life and usefulness of your equipment.

HQ also helps manage your captured media from inspections. Use HQ to organize and archive jobs and media, store customer information, customize reports, generate DVDs, and distribute complete reports or individual media to customers.

The 8 GB USB drive included with your CS65 has HQ preloaded. Installing HQ from the included USB drive ensures that the serial number for your CS65 is correctly registered in the Equipment Locker. Alternatively, you can download the latest version at www.hq.ridgid.com.

About HQ

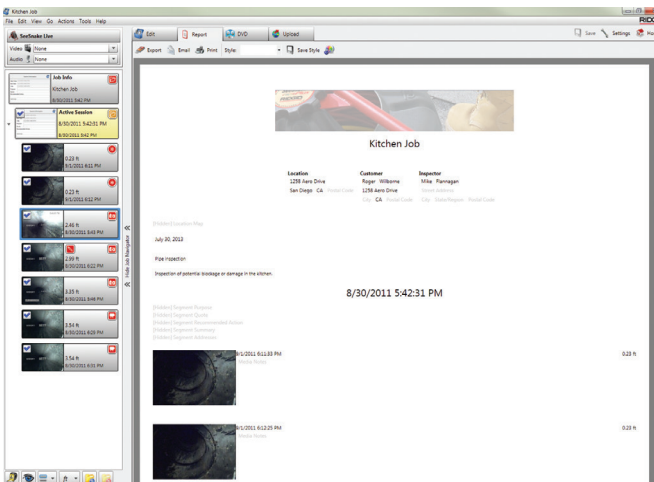
HQ can be installed on PCs running Windows 7 or later. The software is translated into over 15 languages and localized for use worldwide.



HQ offers an array of tools to manage, group, and backup jobs, edit photos, create and edit video clips, add notes, customer details, and job information.



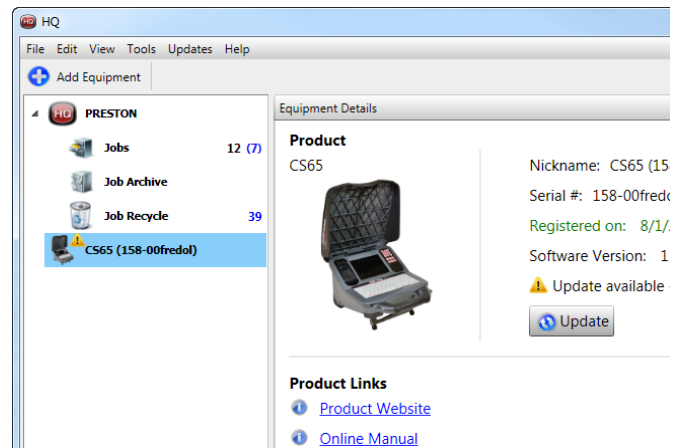
You can generate and email a printable PDF from HQ or create a multimedia job report for digital or DVD distribution. It is easy to customize the pre-built report styles to feature your company's logo and contact information. You can also add promotional or informational photos and video clips to reports.



Content in HQ can be uploaded to RIDGIDConnect, an online service for storing and sharing inspection media and reports. Learn more at www.ridgidconnect.com.

Updating CS65 Software

Open HQ and click the Update button. HQ automatically guides you through the update process.

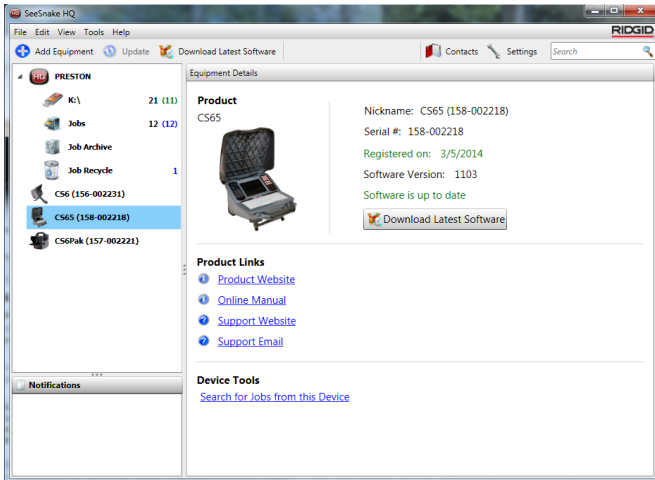




Register your CS65 in HQ's Equipment Locker to be automatically notified when software updates become available.

Note: FAT32 formatting is required for updating the CS65. USB drives larger than 32 GB cannot be used for updating software.

To update the CS65 software, follow these steps:

1. Open HQ.
2. Click on the CS65 icon in your Equipment Locker to check for an Update Available message.
3. If an update is available, click on Download Latest Software.



4. Insert a USB drive into the computer and follow HQ's instructions to proceed.
5. Safely eject the USB drive from the computer and insert it into the CS65.
6. Press the Power key  to power on the CS65.
7. Press the Select key  to initiate the update.

The CS65 will verify, reboot, install the update, and reboot again to complete the process.

Note: Prior to updating, remove any other USB drives from the CS65 until the update is complete. Insert only the USB drive with the update installed.

Maintenance and Support

Cleaning

WARNING



To reduce the risk of electrical shock, disconnect all cords and cables and remove the battery from the CS65 before to cleaning.

The best way to clean the CS65 is with a damp cloth. Close the USB port cover before cleaning.

Do not allow any liquid to enter the CS65. Do not hose down the CS65. Do not use liquid or abrasive cleaners. Only clean the display with cleaners approved for use on LCDs.

Accessories

Only use accessories designed and recommended for use with the SeeSnake CS65. Accessories designed for use with other tools may become hazardous when used with the CS65.

The following RIDGID products have been designed for use with the CS65:

- SeeSnake MAX rM200
- Original SeeSnake Camera Reels
- SeeSnake MAX Camera Reels
- Dual Battery Kit with Charger
- Single Battery Kit with Charger
- AC Adapter
- SeekTech or NaviTrack Receivers
- SeekTech or NaviTrack Transmitters

Transport and Storage

Store and transport your CS65 with the following in mind:

- Store in a locked area out of the reach of children and people unfamiliar with its purpose.
- Store in a dry place to reduce risk of electrical shock.
- Store away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat.
- Storage temperature should be -10°C to 70°C [14°F to 158°F].
- Do not expose to heavy shocks or impacts during transport.
- Remove the battery before shipping and before storing for extended periods of time.

Service and Repair

Improper service or repair can cause the CS65 to be unsafe to operate.

Service and repair of the CS65 must be performed at a RIDGID Independent Authorized Service Center. To maintain the safety of the tool, make sure a qualified repair person services your CS65 using only identical replacement parts. Discontinue using the CS65, remove the battery, and contact service personnel under any of the following conditions:

- If liquid has been spilled or objects have fallen into the equipment.
- If the equipment does not operate normally when operating instructions are followed.
- If the equipment has been dropped or damaged.
- If the equipment exhibits a distinct change in performance.

For information on your nearest RIDGID Independent Service Center or any service or repair questions:

- Contact your local RIDGID distributor.
- Go to www.RIDGID.com.
- Contact RIDGID Technical Services Department at rttechservices@emerson.com or, in the U.S. and Canada, call 800-519-3456.

Disposal

Parts of your system contain valuable materials that can be recycled. There are companies that specialize in recycling that may be found locally. Dispose of the components in compliance with all applicable regulations. Contact your local waste management authority for more information.



For EC countries: Do not dispose of electrical equipment with household waste!

According to the European Guideline 2002/96/EC for Waste Electrical and Electronic Equipment and its implementation into national legislation, electrical equipment that is no longer usable must be collected separately and disposed of in an environmentally correct manner.




Battery Disposal



RIDGID is licensed with the Call2Recycle® program, operated by the Rechargeable Battery Recycling Corporation (RBRC™). As a licensee, RIDGID pays the cost of recycling RIDGID rechargeable batteries.

In the U.S. and Canada, RIDGID and other battery suppliers use the Call2Recycle® program network of over 30,000 collection locations to collect and recycle rechargeable batteries. Return used batteries to a collection location for recycling. Call 800-822-8837 or visit www.call2recycle.org to find a collection location.

For EC countries: Defective or used battery packs/batteries must be recycled according to the guideline 2006/66/EC.

Troubleshooting		
Problem	Probable Fault	Solution
CS65 does not power on	Power source	Verify that the battery is a compatible model. Not all batteries that fit into the battery shoe are compatible.
		Recharge the battery.
		Switch to AC power.
Unable to capture media	No primary drive	Check primary drive settings.
		Insert a USB drive. Verify the USB drive you are using is working and not corrupted or read-only.
Primary storage not found	HDD temperature limit exceeded	Check drive specifications. Drive failure may occur when working in extreme temperatures. <i>Note: For more information on working in extreme temperatures, refer to Appendix A: Extreme Temperature Operation.</i>
	Drive not inserted	Verify that a drive is inserted in to the primary storage location.
No audio during playback	Speakers are muted	Verify the LED below the Microphone Mute key  is lit and the icon is yellow.
	Settings need adjustment	Go to the CS65 Settings tab to adjust the speaker volume and/or microphone gain settings.
The display is dark or hard to see	Glare on the display	Position LCD display facing away from direct sunlight.
	LCD settings	Go to the LCD Settings tab to adjust the LCD display settings.
	Camera LED settings	Press the LED Brightness key  to adjust the camera LED brightness.
Low battery warning appears	Low battery	Power off to avoid data loss. Recharge the battery or switch to AC power.
Count measurement accuracy is unreliable	The drum's integrated counter settings are incorrect for the drum or push cable	Verify the settings are correct for the cable length, cable diameter, and drum.
	Counting from the wrong zero point	Confirm measurement starts from the intended zero point. Reset zero point using the Zero key  .
No live view	No power to the SeeSnake monitor	Check to make sure the battery is charged or the AC adapter is properly plugged in.
	Slip-ring assembly is broken or the connection is faulty	Check all alignment and connection pins. Check placement and pin condition in the slip-ring assembly.
	System cable connection is faulty	Check system cable connection. Make sure the connector is pushed all the way in.

Appendices

Appendix A: Extreme Temperature Operation

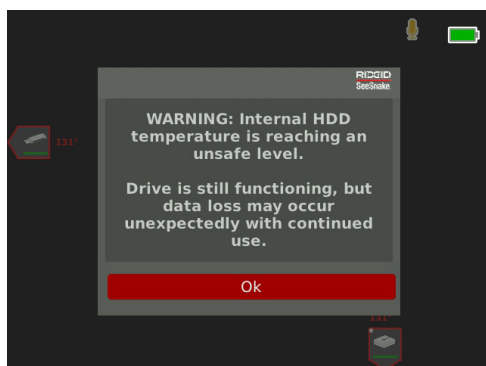
The CS65's operating temperature is determined by individual components. Both the AC adapter and the factory installed internal hard drive may limit operation in extreme temperatures. When working in temperatures outside the range of 0°C to 40°C [32°F to 104°F], do not use the AC adapter.

The internal hard drive functions in a temperature range from 5°C to 35°C [41°F to 95°F] according to the manufacturer. Testing has shown the drive to consistently work over a much broader range, but we recommend you abide by the manufacturer's temperature specifications. Failure to do so may result in data loss.

When working in temperatures outside of this range, we recommend that you switch your primary storage to one of the USB ports and insert a USB flash drive.

Alternatively, you can replace the user swappable installed drive with a drive that has a wider operating tolerance range, such as a solid state drive.

If you use the external hard drive in extreme temperatures, you may receive a warning alert. In the event of a warning, manually stop all recordings in progress and change your primary storage device or power off the CS65 to avoid data loss.



Note: For more information on changing your primary storage device, refer to the Storage Settings section.

Appendix B: Replacing the Internal Hard Drive

NOTICE Avoid removing or replacing the internal hard drive on static prone areas such as carpeting. Static can damage sensitive components.

Users may replace the internal 1 TB hard drive. To ensure maximum compatibility, replace the hard drive with the same model hard drive you are replacing. However, most hard drives with a USB connector should be compatible. For hard drive use in extreme temperatures, we recommend replacing the internal hard drive with a solid state hard drive.

The USB port is a USB 2.0 port and is compatible with most USB 2.0 devices requiring only one USB port and no external power connection. Most USB 3.0 devices are backwards compatible with the USB 2.0 standard and work in the CS65. Consult the drive manufacturer on backwards compatibility with USB 2.0 ports.

1. Power off the CS65 and remove the battery or AC adapter.
2. Turn the CS65 upside down with the front handle facing you.



3. Remove the 20 perimeter screws from the kickstand panel. Do not remove the screws at the base of the kickstand.
4. Grasp the kickstand and gently pull the panel left and up to remove it.



5. Slide the internal hard drive to the left, and then up and out.
6. Disconnect the USB cord.
7. Connect the USB cord from inside the CS65 to the new internal hard drive you are placing into the system.



8. Slide the internal hard drive down and right until it is secure between the foam inserts inside the system.
9. Replace the kickstand panel and perimeter screws.
10. Tighten the screws.

When you power on the CS65 after replacing the internal hard drive, the system prompts you to format the new drive. Formatting the new drive enables better performance and helps prevent the drive from corrupting.

Appendix C: rM200 Docking System

⚠ WARNING

Carrying the system incorrectly can cause the CS65 to disengage from the docking system and may result in property damage and/or serious injury.

Never carry the rM200 by the CS65's front cover handle when transporting the system. Always use the frame handle on the rM200.



To mount the CS65 onto the rM200, follow these steps:

1. Depress the red buttons on the rM200 so that they do not obstruct the CS65's kickstand. Unfold the kickstand from the bottom of the CS65, and hold the system so that it is parallel to the back of the rM200. Place the CS65 onto the rM200.
2. Reset the red buttons on the rM200 so they lock the CS65 into place.

Removing the CS65 from the Docking System

To remove the CS65 from the rM200, depress the red buttons on the rM200 and remove the CS65.



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