

# vCam-5 Inspection System

- One touch recording
- Lightweight and compact design
- Records to USB, SD or HDD
- JPEG still image capture
- Wi-Fi and Ethernet interface
- Li-ion Rechargeable Batteries
- Multi colour text writer
- High resolution 8" LCD
- Full splash-proof keyboard
- Multi language



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*Disclaimer: Product and accessory specification and availability information is subject to change without prior notice.*

# v-Cam-5 Control Module

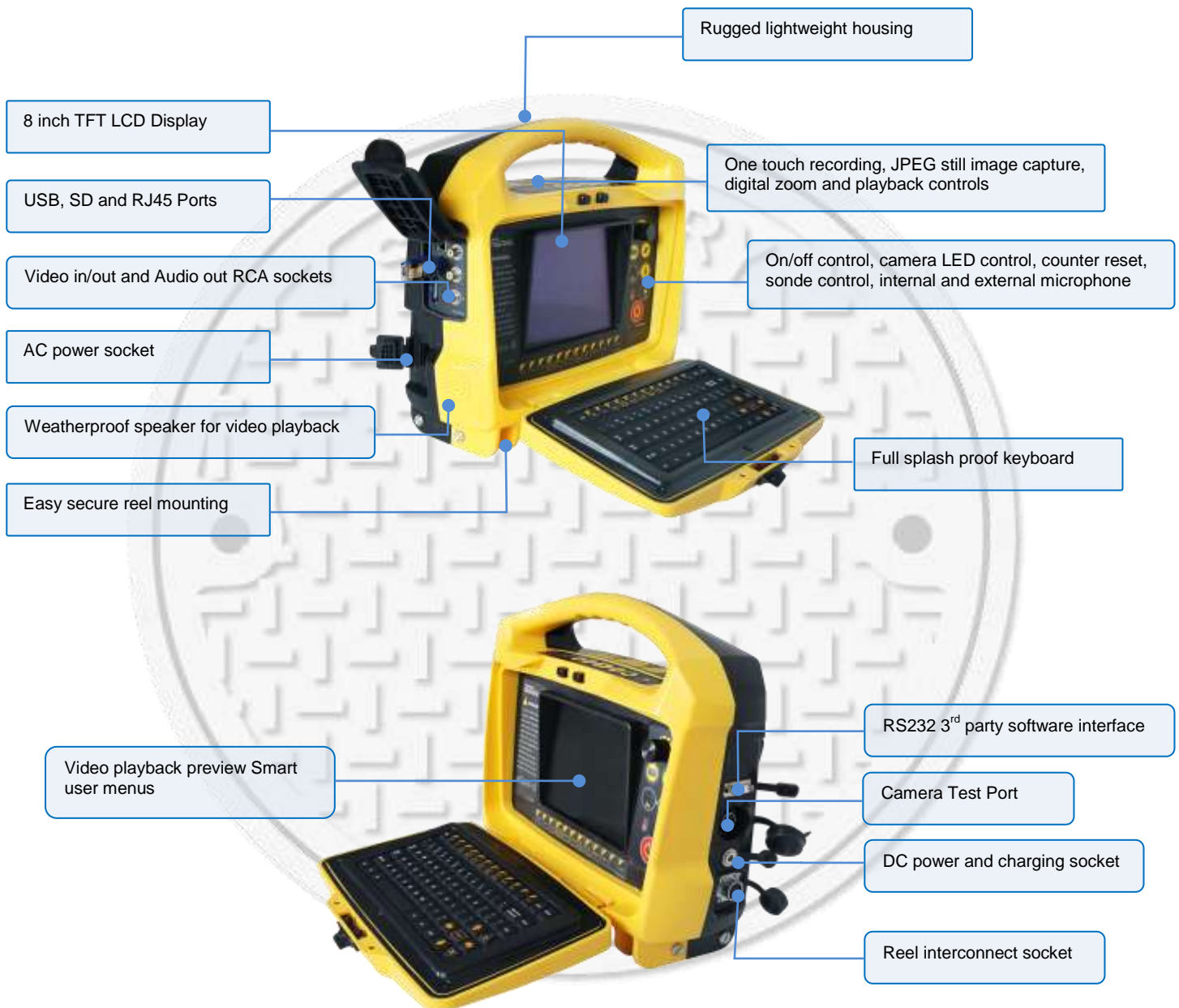
## v-Cam-5 Video Inspection Systems

Our vCam-5 Inspection is centred around the innovative vCam-5 Control Module. The Control Module's lightweight ergonomic design is manufactured for tough field usage and is weather resistant to the IP54 specification. Designed with ease of use in mind and engineered for durability and dependability the vCam-5 Control Module can give you trouble free operation with little down time.

The vCam-5 records video and captures still images to its 300 GB internal hard drive or directly to USB thumb-drives or SD cards in AVI video format. Standard features include a full text writer with the ability to change font and background colours, 512Hz/640Hz transmitting sonde, internal/external voice-over, built-in rechargeable batteries, camera test port and software interface.

### Features:

- ▶ 4 x Digital Zoom – for viewing objects up close
- ▶ Wi-Fi Interface – for data transfer to PC
- ▶ Video Streaming – to your PC with file access and recording controls
- ▶ RS232 Interface – for use with 3rd party observation reporting software



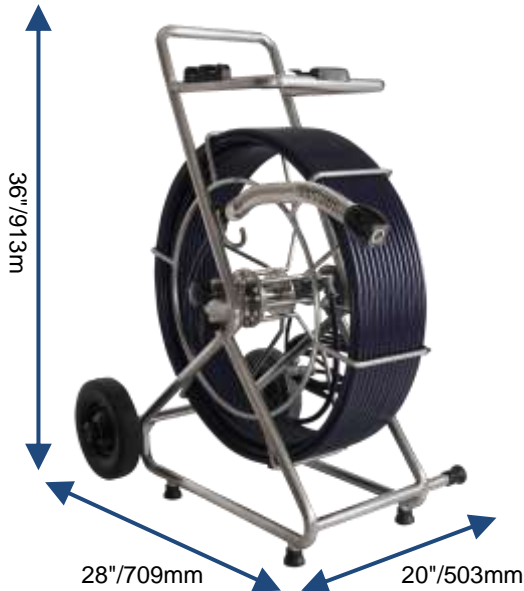
# Reels and Camera Heads

## Reels

The vCam-5 reels are built tough for high performance use to cope with your day-in/day-out situations. All the reels are built of stainless steel for outdoor use and come with locatable sondes and detachable field-serviceable termination coils. Our "True Blue" brand of pushrod gives you maximum pushing distances in pipes but with good flexibility for going through elbows and sweeps.

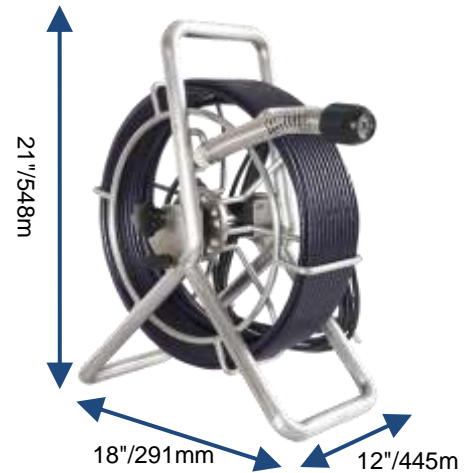
### Type-CP "Standard" Reel

- ▶ Profile is wide enough to roll without rocking and tipping but slim enough to go through doorways and gates
- ▶ All stainless steel construction
- ▶ Friction and locking brakes
- ▶ Available in 200 feet and 400 feet of 12mm rod



### Type-M2 "Mini" Reel

- ▶ Profile is small for use in those hard to reach areas such as rooftops, multi level buildings and for use in confined spaces
- ▶ All stainless steel construction
- ▶ Friction and locking brakes
- ▶ Available in 100 feet and 200 feet of 10mm rod



## Camera Heads

Vivax-Metrotech Camera Heads have stainless steel housings, tough sapphire lenses with high intensity LEDs. Our camera heads are a "modular" design for easy service by local authorised service centres. The camera attaches to hardened termination springs – tougher than those used in previous models – which are able to negotiate sweeps and difficult entry points. All our camera heads carry our full one year warranty, and a camera exchange program is available.

### Cameras for the "Standard" Type-CP Reel

#### D34-C

1.3 inch (34mm) Diameter

Use in 3" (75mm) to 6" (150mm) lines

Self Levelling

Full Colour



#### D46-C

1.8 inch (46mm) Diameter

Use in 4" (100mm) to 8" (200mm) lines

Self Levelling

Full Colour



### Cameras for the "Mini" Type-M2 Reel

#### D34-M

1.3 inch (34mm) Diameter

Use in 3" (75mm) to 4" (100mm) lines

Self Levelling

Full Colour



#### D25-M

1 inch (25mm) Diameter

Use in 2" (50mm) to 3" (75mm) lines

Fixed Position

Full Colour



## Camera Skids

### Guide Skids



Plastic Guide Skids help protect the camera head, increase pushing distance and centre the camera head in pipes.

### Type "B" Adjustable Skid



The Type "B" Adjustable Skid, for the D46/SL, is used for larger diameter pipes in lines from 8 to 15 inches in diameter. The Type "B" Skid is made of aluminium with stainless steel hardware and polyurethane wheels.

### Type "B" Skid Light Kit



The Type "B" Light Kit requires no tools to attach to the Type "B" Skid. The powerful lights are powered by 3 each AA alkaline batteries and provides 6000mcd of additional lighting.

### VM-540 Camera & Sonde Locator



The VM-540 Locator can locate the vCam series cameras, sondes and crawler camera systems. The receiver comes with Sonde frequencies of 512Hz and 33kHz and with a passive 60Hz mode which will detect the presence of power lines, CATV, telephone and some metallic pipes which radiate 60Hz. Depth is shown at the push of a button on the LCD display.

### vLocCam2 Multi Frequency Camera & Sonde Locator



The vLocCam2 Sonde and Camera locator is a lightweight, durable locator with a full colour display. The vLocCam2 Receiver comes standard with sonde/camera frequencies of 8kHz, 33kHz, 512Hz, 640Hz, power and radio. Push button depth displays the depth of cover.

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# vCam-5 Type-CP System Data Sheet

## A. Typical Applications

Component	Specification
<b>Purpose</b>	To inspect and provide a digital video and image record of the inspection of the interior of metallic and non-metallic, pipes, drains, conduits and ducts. The most typical application is the inspection of sewer laterals, sewer mainlines and plumbing. Digital video and jpeg picture images are viewed on the control module LCD and recorded onto the internal hard drive, USB thumb drives or SD (secure digital) card.
<b>System Components</b>	<ul style="list-style-type: none"> <li> <b>Viewing &amp; Recording Device:</b>  vCam-5 Control Module (comes with an accessory kit, quick guide and manual) </li> <li> <b>Reels:</b> (reels purchased with pushrod come with an insertion sleeve)  Type-CP Standard Reel with pushrod options of: <ul style="list-style-type: none"> <li>– 200ft/60m</li> <li>– 400ft/120m</li> </ul> </li> <li> <b>Camera Head Options:</b>  <b>Type-CP Standard Reel Cameras</b> (<i>Type-CP reel cameras are interchangeable</i>) <ul style="list-style-type: none"> <li>– D34-C 1.3"/34mm Self levelling colour camera</li> <li>– D46-C 1.8"/46mm Self levelling colour camera</li> </ul> </li> </ul> <p><i>The vCam-5 control module and Type-CP standard reel are backward compatible with previous vCamDigital and vCamModular modules.</i></p>

Control Module	Type-CP Reel	D34-C Camera	D46-C Camera
			

# vCam-5 Type-CP System Data Sheet

## B. vCam-5 Control Module

Component	Specification
<b>Dimensions</b>	14.2"(L) x 5.91"(W) x 12.6"(H) (360mm(L) x 150mm(W) x 320mm(H))
<b>Weight</b>	11.6lbs (5.2kg)
<b>Power Supply</b>	- AC Power: 100V/240V, AC power powers unit and charges internal batteries - DC Power: 12V DC external power supply powers unit and charges internal batteries
<b>Fuse</b>	- 10 Amp – 250 Volt, glass, quick blow
<b>Internal Storage</b>	320GB / 7200 RPM Hard Drive
<b>External Storage</b>	- USB Drives - SD Card
<b>File Format</b>	- AVI Video - JPEG Still Image Capture
<b>Video Format</b>	Automatically senses PAL or NTSC and changes format
<b>Display</b>	8" TFT LCD (800 x 600) diagonal measurement
<b>Distance Counter</b>	Approximate distance is shown (forward and backwards) in feet or meters on the LCD screen with the option to appear in still images or recorded video.*
<b>Environmental</b>	- Water resistant to IP54 (IEC 60529-Light shower) (lid closed) - Shock resistant (IEC 60068-2-31) (lid closed)
<b>Temperature Range</b>	- Storage: -4°F to 158°F (-20°C to 70°C) - Operating: 14°F to 122°F (-10°C to 50°C)
<b>Internal Batteries</b>	- Internal Lithium-ion rechargeable batteries and charger (12V) - 4 hour runtime when Sonde on, 6 hour when Sonde off
<b>Mounting</b>	Mounts directly atop Type-CP reel. Mount kit is available previous Type-C reel.

## Operator Controls

Controls	Functions
<b>Camera LED Dimmer</b>	Variable control on front panel to adjust brightness of camera LED
<b>Distance Counter</b>	Push button control on front panel to zero out distance out**
<b>Sonde Operation</b>	- Push button control on front panel turns Sonde on and off - Push button glows green and Sonde icon appears on status bar on LCD when active
<b>Microphone Operation</b>	- Push button control on front panel turns both internal and external microphones on and off - Push button glows red and microphone icon appears on status bar on LCD when active
<b>Unit On/Off</b>	- Push button control on front panel turns unit on and off - Push button glows green and battery icon appears on status bar on LCD showing battery status and if powered by AC/DC power or internal battery power
<b>Recording Control</b>	- Push button control on top panel, push to record, push second time to stop recording - Push button glows red when recording and flashing icon appears on status bar on LCD when recording
<b>Image Capture</b>	Push button control on top, press once and image is captured to the default storage device selected during setup. JPEG icon flashes on LCD status bar with image file name.
<b>Video Playback Control</b>	Push button control strip on top panel for video pause, step reverse, play, step forward and stop. Icons appear on status bar to advise which function is being used.
<b>Digital Zoom</b>	Push button on top panel, pressing repeatedly toggles through 4 x zoom then off. When button is pressed a movable window appears on the LCD, use the left/right/up/down keys to move window and zoom in on a desired area

# vCam-5 Type-CP System Data Sheet

Controls	Functions
<b>On Screen Display (OSD)</b>	Pressing keyboard F2 brings up OSD showing time, date and distance counter on bottom of screen, press to move to top of screen, pressing again turns off OSD
<b>Keyboard</b>	Custom QWERTY splash proof keyboard specifically labelled function keys F1 through F12

Sockets and Jacks	Functions
<b>Audio and Video</b>	Colour coded industry standard RCA female sockets on left panel for video in, video and audio out
<b>Microphone</b>	3.5mm female industry standard socket on front panel
<b>Media Sockets</b>	USB 2.0 and SD (secure digital) sockets on left side panel
<b>Ethernet</b>	Industry standard RJ45 Ethernet socket on left panel for direct PC interface
<b>AC Power</b>	100V-240V Grounded power socket on left panel
<b>RS232</b>	9 Pin female D Socket on right panel for RS232 interface for CCTV survey software
<b>Camera Test Port</b>	4 Pin female keyed socket on right panel to test camera head picture and LED's
<b>DC Power</b>	12V 1 Pin male circular sock for DC power cable assembly
<b>Reel Interconnect</b>	9 Pin female keyed locking socket for reel interconnect cable assembly
<b>Battery Indicators</b>	<ul style="list-style-type: none"> <li>- Battery icon on front panel glows red while charging and turns off when fully charged</li> <li>- Battery icon also shows on status bar indicating if running on AC/DC power or internal batteries</li> </ul>

Software	Functions
<b>Software</b>	Free vCam Media Central software available from download at our website. Software will convert video formats, play videos, take snapshots from playing video and burn DVD's.

## C. Type-CP Reel Assemblies

Component	Specification
<b>Pushrod</b>	Fibreglass rod surrounded by multi conductors and coax wrapped in a Kevlar braid with a high density Polyethylene jacket
<b>Pushrod Length Options</b>	200ft (60m), 400ft (120m)
<b>Pushrod Diameter</b>	0.47" (12mm)
<b>Minimum Break Strength</b>	4000lbs (1800kg)
<b>Bend Radius</b>	Approximately 40 x the rods OD
<b>Sonde Frequencies</b>	512Hz and 640Hz. Selectable and set as default in the control module setup menu
<b>Sonde Output/Range</b>	5 Watt output power provided by the control module. Average maximum locatable depth approximately 12ft (4m) in cast iron pipes. Possibly more in non metallic pipes.
<b>Termination</b>	<ul style="list-style-type: none"> <li>- Termination Base – Custom stainless steel hardware with white POM (a plastic) housing a Sonde coil. Filled with two part epoxy securing Kevlar braids and waterproofing</li> <li>- Termination Spring Assembly – Tempered steel spring, steel lanyards and detachable coiled cord</li> </ul>

# vCam-5 Type-CP System Data Sheet

## Type-CP Reel Assemblies

Component	Specification
<b>Distance Counter</b>	The encoder driver accurate to 0.33ft (0.1m) resolution*
<b>Dimensions</b>	28"(L) x 19.7"(W) x 35.8"(H) (710mm(L) x 500mm(W) x 910mm(H)) (without pushrod)
<b>Weight</b>	<ul style="list-style-type: none"> <li>- Without pushrod: 31lbs (14kg)</li> <li>- With 200ft/60m of 12mm pushrod: 53lbs (24kg)</li> <li>- With 400ft/120m of 12mm pushrod: 75lbs (34kg)</li> </ul>
<b>Environmental</b>	Water resistant to IP54
<b>Construction</b>	All stainless steel tubular frame with stainless hardware
<b>Braking/Locking</b>	Hand tightening friction brake to slow pushrod cage, push/pull brake lever to lock cage in place
<b>Other Options</b>	<p><b>Interconnect Cable</b> – Standard 12ft (4m) long version comes with all reels, 25ft (8m) long version is available an accessory purchase</p> <p><b>Insertion Sleeve</b> – Used to protect pushrod from rubbing on edges at entry point</p> <p><b>Drip Bag</b> – An accessory attaches around the reel to catch water</p>

## D. Camera Heads

### D34-C, 1.3inch/34mm Self Levelling Colour Camera

Component	Specification
<b>Application</b>	Used with Type-CP Reel attached to spring, in pipe diameters from 3 to 6 inches
<b>Horizontal Resolution</b>	540 TVL
<b>Active Pixels</b>	NTSC: 768 x 492/PAL: 752 x 582
<b>Focus Point</b>	12" (300mm)
<b>Aperture / FOV</b>	F2.0/90°
<b>Light Sensitivity</b>	0.5LUX
<b>Lighting</b>	10,000 mcd illumination LED x 9 pcs (MilliCanDela or thousandth of a candela)
<b>Auto Upright</b>	Cantilever self levelling design
<b>CCD Type</b>	Colour CCD camera assembly available in NTSC or PAL format
<b>Camera Housing</b>	Stainless steel
<b>Camera Lens</b>	Scratch resistant Sapphire
<b>Environmental</b>	Water resistance up to 6 BAR pressure
<b>Temperature Range</b>	Storage: -4°F to 158°F (-20°C to 70°C); Operating: 14°F to 122°F (-10°C to 50°C)
<b>Dimension Installed</b>	1.3" (Dia) x 2.2"(L) / 34mm (Dia) x 46mm(L) without skid
<b>Total Dimensions</b>	1.3" (Dia) x 2.9"(L) / 34mm (Dia) x 73mm(L) without skid
<b>Weight</b>	0.45lbs (0.205kg)
<b>Shipping Weight</b>	0.75lbs (0.34kg)
<b>Warranty</b>	1 Year
<b>Options</b>	Various skids and aftermarket skids



# vCam-5 Type-CP System Data Sheet

## D46-C, 1.8inch/46mm Self Levelling Colour Camera

Component	Specification
<b>Application</b>	Used with Type-CP Reel attached to spring, in pipe diameters from 4 to 8 inches
<b>Horizontal Resolution</b>	420 TVL
<b>Active Pixels</b>	NTSC: 500 x 482/PAL: 500 x 482
<b>Focus Point</b>	12" (300mm)
<b>Aperture / FOV</b>	F2.0/75°
<b>Light Sensitivity</b>	0.5LUX
<b>Lighting</b>	10,000 mcd illumination LED x 27 pcs (MilliCanDela or thousandth of a candela)
<b>Auto Upright</b>	Cantilever self levelling design
<b>CCD Type</b>	Colour CCD camera assembly available in NTSC or PAL format
<b>Camera Housing</b>	Stainless steel
<b>Camera Lens</b>	Scratch resistant Sapphire
<b>Environmental</b>	Water resistance up to 6 BAR pressure
<b>Temperature Range</b>	Storage: -4°F to 158°F (-20°C to 70°C); Operating: 14°F to 122°F (-10°C to 50°C)
<b>Dimension Installed</b>	1.8" (Dia) x 2.7"(L) / 46mm (Dia) x 68.5mm(L) without skid
<b>Total Dimensions</b>	1.8" (Dia) x 3.4"(L) / 46mm (Dia) x 86.3mm(L) without skid
<b>Weight</b>	0.86lbs (0.39kg)
<b>Shipping Weight</b>	1.19lbs (0.54kg)
<b>Warranty</b>	1 Year
<b>Options</b>	Various skids and aftermarket skids

## E. Shipping Weights

Component	Specification
<b>vCam-5 Control Module</b> (with tool kit)	- Dimension: 15.8"(L) x 8.7"(W) x 17.3"(H) (400mm(L) x 220mm(W) x 440mm(H)) - Weight: 14.3lbs (6.5kg)
<b>Reels without Pushrod</b>	- Dimension: 31.1"(L) x 21.3"(W) x 38.6"(H) (790mm(L) x 540mm(W) x 980mm(H)) - Weight: 44.7lbs (20.3kg)
<b>Reels with Pushrod</b> (Reels with pushrod, camera head, insert sleeve and interconnect cable)	<ul style="list-style-type: none"> <li>• 200ft/60m           <ul style="list-style-type: none"> <li>- Dimension: 25"(L) x 25"(W) x 6"(H) (635mm(L) x 635mm(W) x 152mm(H))</li> <li>- Weight: 26lbs (11.8kg)</li> </ul> </li> <li>• 400ft/120m           <ul style="list-style-type: none"> <li>- Dimension: 31.1"(L) x 21.3"(W) x 38.6"(H) (790mm(L) x 540mm(W) x 980mm(H))</li> <li>- Weight: 88.7lbs (40.3kg)</li> </ul> </li> </ul>
<b>Pushrod</b> (Coiled pushrod sections with base termination (no coiled cord, lanyard or spring))	<ul style="list-style-type: none"> <li>• 200ft/60m           <ul style="list-style-type: none"> <li>- Dimension: 31.1"(L) x 21.3"(W) x 38.6"(H) (790mm(L) x 540mm(W) x 980mm(H))</li> <li>- Weight: 66.7lbs (30.3kg)</li> </ul> </li> <li>• 400ft/120m           <ul style="list-style-type: none"> <li>- Dimension: 25"(L) x 25"(W) x 6"(H) (635mm(L) x 635mm(W) x 152mm(H))</li> <li>- Weight: 54lbs (24.5kg)</li> </ul> </li> </ul>

# vCam-5 Type-CP System Data Sheet


## F. Service Items

Item	Details
<b>Camera Removal Tool</b>	Used to remove the camera head
<b>Terminations</b>	<ul style="list-style-type: none"> <li>- Base Kit (12mm) – parts supplied to attach termination spring base and Sonde coil to pushrod</li> <li>- Spring Kits (12mm) – consist of coiled cord assembly, lanyard set and spring</li> </ul>
<b>Service Exchange Camera Program</b>	A limited number of 'service exchange' cameras are generally available at reduced cost provided the non working camera is returned
<b>Control Module Tool Kit</b>	<p>A carry pouch is included with the control module to carry:</p> <ul style="list-style-type: none"> <li>• SD Card</li> <li>• USB thumb drive</li> <li>• Camera removal tool</li> <li>• AC power cord</li> <li>• DC power cord</li> <li>• 2mm and 3mm hex wrenches</li> <li>• Ethernet cable</li> <li>• CD with manual and video codec</li> </ul>
<b>Camera Head Skids</b>	Various plastic ball skids and range of aftermarket skids are available
<b>Pipe Insertion Sleeve</b>	A plastic flexible sleeve used to protect pushrod from rubbing against sharp pipe edges

## G. Warranty

Item	Details
<b>Standard Limited Warranty</b>	<p>Camera Heads: 1 year</p> <p>Reels &amp; Pushrods: 1 year</p> <p>Control Module: 1 year</p> <p>Plastic Ball Skids: 6 months</p> <p>Aftermarket Skids: 6 months</p>

## H. Warnings

	<p>Dimensions and weight conversions are approximate (metric data is the most accurate). HDD recorder and LCD display used in this product are consumer products and models may change – Vivax-Metrotech Corporation attempts to ensure that the minimum features listed here are present in every recorder – some additional features may change from model to model. Vivax-Metrotech Corporation continues to update and improve its products – information on this data sheet may have changed or been superseded – check with your local sales representative or Vivax-Metrotech Corporation for updates.</p>
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\* Contact your local distributor or service centre for more details and ordering information on aftermarket skids.

\*\* Distance counter shown on LCD should be used for an estimate. Care should always be used by actually locating the camera head with a Sonde or pipe and cable locator.

# vCam-5 Type-M2 System Data Sheet

## A. Typical Applications

Component	Specification
<b>Purpose</b>	To inspect and provide a digital video and image record of the inspection of the interior of metallic and non-metallic, pipes, drains, conduits and ducts. The most typical application is the inspection of sewer laterals, sewer mainlines and plumbing. Digital video and jpeg picture images are viewed on the control module LCD and recorded onto the internal hard drive, USB thumb drives or SD (secure digital) card.
<b>System Components</b>	<ul style="list-style-type: none"> <li> <b>Viewing &amp; Recording Device:</b>  vCam-5 Control Module (comes with an accessory kit, quick guide and manual) </li> <li> <b>Reels:</b> (reels purchased with pushrod come with an insertion sleeve)  Type-M2 Mini Reel with pushrod options of: <ul style="list-style-type: none"> <li>– 100ft/30m</li> <li>– 200ft/60m</li> </ul> </li> <li> <b>Camera Head Options:</b>  <b>Type-M2 Mini Reel Cameras</b> (<i>Type-M2 reel cameras are interchangeable by changing the coiled cord, lanyards and spring</i>) <ul style="list-style-type: none"> <li>– D25-M 1"/25mm diameter fixed position colour camera, comes with manual focus tool</li> <li>– D34-M 1.3"/34mm Self levelling colour camera</li> </ul> </li> </ul> <p><i>The vCam-5 control module and Type-M2 reel are backward compatible with previous vCamDigital and vCamModular modules.</i></p>

Control Module	Type-CP Reel	D34-C Camera	D46-C Camera
			

# vCam-5 Type-M2 System Data Sheet

## B. vCam-5 Control Module

Component	Specification
<b>Dimensions</b>	14.2"(L) x 5.91"(W) x 12.6"(H) (360mm(L) x 150mm(W) x 320mm(H))
<b>Weight</b>	11.6lbs (5.2kg)
<b>Power Supply</b>	- AC Power: 100V/240V, AC power powers unit and charges internal batteries - DC Power: 12V DC external power supply powers unit and charges internal batteries
<b>Fuse</b>	- 10 Amp – 250 Volt, glass, quick blow
<b>Internal Storage</b>	320GB / 7200 RPM Hard Drive
<b>External Storage</b>	- USB Drives - SD Card
<b>File Format</b>	- AVI Video - JPEG Still Image Capture
<b>Video Format</b>	Automatically senses PAL or NTSC and changes format
<b>Display</b>	8" TFT LCD (800 x 600) diagonal measurement
<b>Distance Counter</b>	Approximate distance is shown (forward and backwards) in feet or meters on the LCD screen with the option to appear in still images or recorded video.*
<b>Environmental</b>	- Water resistant to IP54 (IEC 60529-Light shower) (lid closed) - Shock resistant (IEC 60068-2-31) (lid closed)
<b>Temperature Range</b>	- Storage: -4°F to 158°F (-20°C to 70°C) - Operating: 14°F to 122°F (-10°C to 50°C)
<b>Internal Batteries</b>	- Internal Lithium-ion rechargeable batteries and charger (12V) - 4 hour runtime when Sonde on, 6 hour when Sonde off
<b>Mounting</b>	No mounting option

## Operator Controls

Controls	Functions
<b>Camera LED Dimmer</b>	Variable control on front panel to adjust brightness of camera LED
<b>Distance Counter</b>	Push button control on front panel to zero out distance out**
<b>Sonde Operation</b>	- Push button control on front panel turns Sonde on and off - Push button glows green and Sonde icon appears on status bar on LCD when active
<b>Microphone Operation</b>	- Push button control on front panel turns both internal and external microphones on and off - Push button glows red and microphone icon appears on status bar on LCD when active
<b>Unit On/Off</b>	- Push button control on front panel turns unit on and off - Push button glows red and battery icon appears on status bar on LCD showing battery status and if powered by AC/DC power or internal battery power
<b>Recording Control</b>	- Push button control on top panel, push to record, push second time to stop recording - Push button glows red when recording and flashing icon appears on status bar on LCD when recording
<b>Image Capture</b>	Push button control on top, press once and image is captured to the default storage device selected during setup. JPEG icon flashes on LCD status bar with image file name.
<b>Video Playback Control</b>	Push button control strip on top panel for video pause, step reverse, play, step forward and stop. Icons appear on status bar to advise which function is being used.
<b>Digital Zoom</b>	Push button on top panel, pressing repeatedly toggles through 4 x zoom then off. When button is pressed a movable window appears on the LCD, use the left/right/up/down keys to move window and zoom in on a desired area

# vCam-5 Type-M2 System Data Sheet

Controls	Functions
<b>On Screen Display (OSD)</b>	Pressing keyboard F2 brings up OSD showing time, date and distance counter on bottom of screen, press to move to top of screen, pressing again turns off OSD
<b>Keyboard</b>	Custom QWERTY splash proof keyboard specifically labelled function keys F1 through F12

Sockets and Jacks	Functions
<b>Audio and Video</b>	Colour coded industry standard RCA female sockets on left panel for video in, video and audio out
<b>Microphone</b>	3.5mm female industry standard socket on front panel
<b>Media Sockets</b>	USB 2.0 and SD (secure digital) sockets on left side panel
<b>Ethernet</b>	Industry standard RJ45 Ethernet socket on left panel for direct PC interface
<b>AC Power</b>	100V-240V Grounded power socket on left panel
<b>RS232</b>	9 Pin female D Socket on right panel for RS232 interface for CCTV survey software
<b>Camera Test Port</b>	4 Pin female keyed socket on right panel to test camera head picture and LED's
<b>DC Power</b>	12V 1 Pin male circular sock for DC power cable assembly
<b>Reel Interconnect</b>	9 Pin female keyed locking socket for reel interconnect cable assembly
<b>Battery Indicators</b>	<ul style="list-style-type: none"> <li>- Battery icon on front panel glows red while charging and turns off when fully charged</li> <li>- Battery icon also shows on status bar indicating if running on AC/DC power or internal batteries</li> </ul>

Software	Functions
<b>Software</b>	Free vCam Media Central software available from download at our website. Software will convert video formats, play videos, take snapshots from playing video and burn DVD's.

## C. Type-M2 Cable Reel Assemblies

Component	Specification
<b>Pushrod</b>	Fibreglass rod surrounded by multi conductors and coax wrapped in a Kevlar braid with a high density Polyethylene jacket
<b>Pushrod Length Options</b>	100ft (30), 200ft (60m)
<b>Pushrod Diameter</b>	0.4" (10mm)
<b>Minimum Break Strength</b>	4000lbs (1800kg)
<b>Bend Radius</b>	Approximately 40 x the rods OD
<b>Sonde Frequencies</b>	512Hz and 640Hz. Selectable and set as default in the control module setup menu
<b>Sonde Output/Range</b>	5 Watt output power provided by the control module. Average maximum locatable depth approximately 12ft (4m) in cast iron pipes. Possibly more in non metallic pipes.
<b>Termination</b>	<ul style="list-style-type: none"> <li>- Termination Base – Custom stainless steel hardware with white POM (a plastic) housing a Sonde coil. Filled with two part epoxy securing Kevlar braids and waterproofing</li> <li>- Termination Spring Assembly – Tempered steel spring, steel lanyards and detachable coiled cord</li> </ul>

# vCam-5 Type-M2 System Data Sheet

## Type-M2 Reel Assemblies

Component	Specification
<b>Distance Counter</b>	The encoder driver accurate to 0.33ft (0.1m) resolution*
<b>Dimensions</b>	17.5"(L) x 10.3"(W) x 21.6"(H) (445mm(L) x 262mm(W) x 548mm(H)) (without pushrod)
<b>Weight</b>	<ul style="list-style-type: none"> <li>- Without pushrod: 16lbs (7.3kg)</li> <li>- With 100ft/30m of 10mm pushrod: 26lbs (11.8kg)</li> <li>- With 200ft/60m of 10mm pushrod: 34lbs (15.4kg)</li> </ul>
<b>Environmental</b>	Water resistant to IP54
<b>Construction</b>	All stainless steel tubular frame with stainless hardware
<b>Braking/Locking</b>	Hand tightening friction brake to slow pushrod cage, push/pull brake lever to lock cage in place
<b>Other Options</b>	<p><b>Interconnect Cable</b> – Standard 12ft (4m) long version comes with all reels, 25ft (8m) long version is available an accessory purchase</p> <p><b>Insertion Sleeve</b> – Used to protect pushrod from rubbing on edges at entry point</p> <p><b>Drip Bag</b> – An accessory attaches around the reel to catch water</p>

## D. Camera Heads

### D25-M, 1inch/25mm Colour Mini Camera

Component	Specification
<b>Application</b>	Used with Type-M2 Reel attached to D25 spring, in pipe diameters from 2 to 3 inches
<b>Horizontal Resolution</b>	540 TVL
<b>Active Pixels</b>	NTSC: 768 x 492/PAL: 752 x 582
<b>Focus Point</b>	12" (300mm)
<b>Aperture / FOV</b>	F2.0/85°
<b>Light Sensitivity</b>	0.5LUX
<b>Lighting</b>	10,000 mcd illumination LED x 9 pcs (MilliCanDela or thousandth of a candela)
<b>Auto Upright</b>	Fixed position module is not self levelling
<b>CCD Type</b>	Colour CCD camera assembly available in NTSC or PAL format
<b>Camera Housing</b>	Stainless steel
<b>Camera Lens</b>	Scratch resistant Sapphire
<b>Environmental</b>	Water resistance up to 2 BAR pressure
<b>Temperature Range</b>	Storage: -4°F to 158°F (-20°C to 70°C); Operating: 14°F to 122°F (-10°C to 50°C)
<b>Dimension Installed</b>	1" (Dia) x 1.4"(L) / 25mm (Dia) x 35.5mm(L) without skid
<b>Total Dimensions</b>	1" (Dia) x 1.9"(L) / 25mm (Dia) x 48.2mm(L) without skid
<b>Weight</b>	0.16lbs (0.073kg)
<b>Shipping Weight</b>	0.33lbs (0.15kg)
<b>Warranty</b>	1 Year
<b>Options</b>	Various skids and aftermarket skids

# vCam-5 Type-M2 System Data Sheet

## D34-M, 1.3inch/34mm Self Levelling Colour Camera

Component	Specification
<b>Application</b>	Used with Type-M2 Reel attached to spring, in pipe diameters from 4 to 8 inches
<b>Horizontal Resolution</b>	540 TVL
<b>Active Pixels</b>	NTSC: 768 x 492/PAL: 752 x 582
<b>Focus Point</b>	12" (300mm)
<b>Aperture / FOV</b>	F2.0/90°
<b>Light Sensitivity</b>	0.5LUX
<b>Lighting</b>	10,000 mcd illumination LED x 27 pcs (MilliCanDela or thousandth of a candela)
<b>Auto Upright</b>	Cantilever self levelling design
<b>CCD Type</b>	Colour CCD camera assembly available in NTSC or PAL format
<b>Camera Housing</b>	Stainless steel
<b>Camera Lens</b>	Scratch resistant Sapphire
<b>Environmental</b>	Water resistance up to 6 BAR pressure
<b>Temperature Range</b>	Storage: -4°F to 158°F (-20°C to 70°C); Operating: 14°F to 122°F (-10°C to 50°C)
<b>Dimension Installed</b>	1.3" (Dia) x 2.2"(L) / 34mm (Dia) x 56mm(L) without skid
<b>Total Dimensions</b>	1.3" (Dia) x 2.9"(L) / 34mm (Dia) x 73mm(L) without skid
<b>Weight</b>	0.45lbs (0.205kg)
<b>Shipping Weight</b>	0.75lbs (0.34kg)
<b>Warranty</b>	1 Year
<b>Options</b>	Various skids and aftermarket skids

## E. Shipping Weights

Component	Specification
<b>vCam-5 Control Module</b> (with tool kit)	- Dimension: 15.8"(L) x 8.7"(W) x 17.3"(H) (400mm(L) x 220mm(W) x 440mm(H)) - Weight: 14.3lbs (6.5kg)
<b>Reels without Pushrod</b>	- Dimension: 20.1"(L) x 13"(W) x 23.6"(H) (510mm(L) x 330mm(W) x 600mm(H)) - Weight: 22lbs (10kg)
<b>Reels with Pushrod</b> (Reels with pushrod, camera head, insert sleeve and interconnect cable)	<ul style="list-style-type: none"> <li>• 100ft/30m           <ul style="list-style-type: none"> <li>- Dimension: 20.1"(L) x 13"(W) x 23.6"(H) (510mm(L) x 330mm(W) x 600mm(H))</li> <li>- Weight: 31.2lbs (14.2kg)</li> </ul> </li> <li>• 200ft/60m           <ul style="list-style-type: none"> <li>- Dimension: 20.1"(L) x 13"(W) x 23.6"(H) (510mm(L) x 330mm(W) x 600mm(H))</li> <li>- Weight: 39.6lbs (18kg)</li> </ul> </li> </ul>
<b>Pushrod</b> (Coiled pushrod sections with base termination (no coiled cord, lanyard or spring))	<ul style="list-style-type: none"> <li>• 100ft/30m           <ul style="list-style-type: none"> <li>- Dimension: 25"(L) x 25"(W) x 6"(H) (635mm(L) x 635mm(W) x 152mm(H))</li> <li>- Weight: 13lbs (5.9kg)</li> </ul> </li> <li>• 200ft/60m           <ul style="list-style-type: none"> <li>- Dimension: 25"(L) x 25"(W) x 6"(H) (635mm(L) x 635mm(W) x 152mm(H))</li> <li>- Weight: 20lbs (9.1kg)</li> </ul> </li> </ul>

# vCam-5 Type-M2 System Data Sheet


## F. Service Items

Item	Details
<b>Camera Removal Tool</b>	Used to remove the camera head
<b>Terminations</b>	<ul style="list-style-type: none"> <li>- Base Kit – parts supplied to attach termination spring base and Sonde coil to pushrod</li> <li>- Base Kit types – 1 inch D25 for use with D25M camera and 10mm for use with D34-M camera</li> <li>- Spring Kits – consist of coiled cord assembly, lanyard set and spring</li> <li>- Spring Kit types – 1 inch D25, 10mm and Dual D25-D33</li> </ul>
<b>Service Exchange Camera Program</b>	A limited number of 'service exchange' cameras are generally available at reduced cost provided the non working camera is returned
<b>Control Module Tool Kit</b>	<p>A carry pouch is included with the control module to carry:</p> <ul style="list-style-type: none"> <li>• SD Card</li> <li>• USB thumb drive</li> <li>• Camera removal tool</li> <li>• AC power cord</li> <li>• DC power cord</li> <li>• 2mm and 3mm hex wrenches</li> <li>• Ethernet cable</li> <li>• CD with manual and video codec</li> <li>• Spare fuse</li> </ul>
<b>Camera Focus Tool</b>	Used on fixed position, non levelling D25-M camera
<b>Camera Head Skids</b>	Various plastic ball skids and range of aftermarket skids are available
<b>Pipe Insertion Sleeve</b>	A plastic flexible sleeve used to protect pushrod from rubbing against sharp pipe edges

## G. Warranty

Item	Details
<b>Standard Limited Warranty</b>	<p>Camera Heads: 1 year</p> <p>Reels &amp; Pushrods: 1 year</p> <p>Control Module: 1 year</p> <p>Plastic Ball Skids: 6 months</p> <p>Aftermarket Skids: 6 months</p>

## H. Warnings

	<p>Dimensions and weight conversions are approximate (metric data is the most accurate). HDD recorder and LCD display used in this product are consumer products and models may change – Vivax-Metrotech Corporation attempts to ensure that the minimum features listed here are present in every recorder – some additional features may change from model to model. Vivax-Metrotech Corporation continues to update and improve its products – information on this data sheet may have changed or been superseded – check with your local sales representative or Vivax-Metrotech Corporation for updates.</p>
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\* Contact your local distributor or service centre for more details and ordering information on aftermarket skids.

\*\* Distance counter shown on LCD should be used for an estimate. Care should always be used by actually locating the camera head with a Sonde or pipe and cable locator.