





## 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 accessory kit, quick guide and manual)</li> <li>• <b>Reel:</b> (reels purchased with pushrod come with a 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> <ul style="list-style-type: none"> <li>○ <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 color camera, comes with manual focus tool</li> <li>- D34-M, 1.3"/34mm Self leveling color camera</li> </ul> </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-M2 Reel	D25-M Camera	D34-M Camera
			

## B. vCam-5 Control Module

Component	Specification
Dimensions	14.2"(L) x 5.91"(W) x 12.6"(H) (360mm(L) x 150mm (W) x 320mm(H))
Weight	10.6lbs (4.8kg)
Power Supply	<ul style="list-style-type: none"> <li>AC Power: 100V / 240V, AC power powers unit and charges internal batteries</li> <li>DC Power: 12V DC external power supply powers unit and charges internal batteries</li> </ul>
Internal Storage	320GB / 7200 RPM Hard Drive
External Storage	<ul style="list-style-type: none"> <li>USB Drives</li> <li>SD Card</li> </ul>
File Format	<ul style="list-style-type: none"> <li>AVI Video</li> <li>JPEG Still Image Capture</li> </ul>
Video Format	Automatically senses PAL or NTSC and changes format
Display	8" TFT LCD (800x600) diagonal measurement
Distance Counter	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.
Environmental	<ul style="list-style-type: none"> <li>Water resistant to IP54 (IEC 60529-Light shower) (lid closed)</li> <li>Shock resistant (IEC 60068-2-31) (lid closed)</li> </ul>
Temperature Range	<ul style="list-style-type: none"> <li>Storage: -4°F to 158°F (-20°C to +70°C)</li> <li>Operating: 14°F to 122°F (-10°C to +50°C)</li> </ul>
Internal Batteries	<ul style="list-style-type: none"> <li>Internal Lithium-ion rechargeable batteries and charger (12V).</li> <li>4 hour runtime when Sonde on, 6 hour when Sonde off</li> </ul>
Mounting	No mounting option

## Operator Controls

Controls	Functions
Camera LED Dimmer	Variable control on front panel to adjust brightness of camera LED
Distance Counter	Push button control on front panel to zero out distance out*
Sonde Operation	<ul style="list-style-type: none"> <li>Push button control on front panel turns Sonde on and off.</li> <li>Push button glows green and Sonde icon appears on status bar on LCD when active</li> </ul>
Microphone Operation	<ul style="list-style-type: none"> <li>Push button control on front panel turns both internal and external microphone on and off.</li> <li>Push button glows red and microphone icon appears on status bar on LCD when active</li> </ul>
Unit On/Off	<ul style="list-style-type: none"> <li>Push button control on front panel turns unit on and off.</li> <li>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</li> </ul>
Recording Control	<ul style="list-style-type: none"> <li>Push button control on top panel, push to record, push second time to stop recording.</li> <li>Push button glows red when recording and flashing icon appears on status bar on LCD when recording</li> </ul>
Image Capture	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.
Video Playback control	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.
Digital Zoom	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.
On Screen Display (OSD)	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 the OSD
Keyboard	Custom QWERTY splash proof keyboard specifically labeled function keys F1 through F12

Sockets and Jacks	Functions
Audio and Video	Color coded industry standard RCA female sockets on left panel for video in, video and audio out
Microphone	3.5mm female industry standard socket on front panel
Media Sockets	USB 2.0 and SD (secure digital) sockets on left side panel
Ethernet	Industry standard RJ45 Ethernet socket on left panel for LAN and direct PC interface
AC Power	100V-240V Grounded power socket on left panel
RS232	9 Pin female D Socket on right panel for RS232 interface for CCTV survey software
Camera Test Port	4 Pin female keyed socket on right panel to test camera head picture and LED's
DC Power	12V 1 Pin male circular sock for DC power cable assembly
Reel Interconnect	9 Pin female keyed locking socket for reel interconnect cable assembly
Battery Indicators	<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>

Sockets and Jacks	Functions
Software	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.

## C. Type-M2 Cable Reel Assemblies

### Pushrod

Component	Specification
Pushrod	Fiberglass rod surrounded by multi conductors and coax wrapped in a Kevlar braid with a high density Polyethylene jacket
Pushrod length Options	<ul style="list-style-type: none"> <li>100ft (30m)</li> <li>200ft (60m)</li> </ul>
Pushrod Diameter	0.4" (10mm)
Minimum Break Strength	4000lbs (1800kg)
Bend Radius	Approximately 40 x the rods OD
Sonde Frequencies	512Hz and 640Hz Selectable and set as default in the control module setup menu
Sonde Output/Range	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.
Termination	<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>

### Type-M2 Reel Assemblies

Component	Specification
Distance Counter	The encoder driver accurate to 0.33ft (0.1m) resolution*
Dimensions	17.5"(L) x10.3"(W) x21.6"(H) (445(L) x 262(W) x 548(H) mm)(without pushrod)
Weight	<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>
Environmental	Water resistant to IP54
Construction	All stainless steel tubular fame with stainless hardware
Braking/Locking	Hand tightening friction brake to slow pushrod cage, Push/pull brake lever to lock cage in place
Other Options	<ul style="list-style-type: none"> <li><b>Interconnect Cable</b> - Standard 12ft (4m) long version comes with all reels, 25ft (8m) long version is available an accessory purchase.</li> <li><b>Insertion Sleeve</b> - Used to protect pushrod from rubbing on edges at entry point.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Drip Bag</b> -An accessory attaches around the reel to catch water splatter.</li> </ul>
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## D. Camera Heads

### D25-M, 1"/25mm Color Mini Camera

Component	Specification
Application	Used on Type-M2 Reel attached to D25 spring, in pipe diameters from 2 to 3 inches
Horizontal Resolution	540TVL
Focus Point	12" (300mm)
Aperture / FOV	F2.0/85°
Light Sensitivity	0.5 LUX
Lighting	10000 mcd illumination LED x 9 pcs, luminous intensity
Auto Upright	Fixed position module is not self leveling
CCD Type	Color CCD camera assembly available in NTSC or PAL format
Camera Housing	Stainless steel
Camera Lens	Scratch resistant Sapphire
Environmental	Water resistance up to 2 BAR pressure
Temperature Range	Storage: -4°F to 158°F (-20°C to +70°C) Operating: 14°F to 122°F (-10°C to +50°C)
Dimension	1"(Dia) x 1.7"(L) (25(Dia) x 42(L) mm) without skid
Weight	0.16lbs (0.073kg)
Shipping Weight	0.33lbs (0.15kg)
Warranty	1 Year
Options	Various skids and aftermarket skids

### D34-M, 1.3"/34mm Self Leveling Color Camera

Component	Specification
Application	Used on Type-M2 Reel attached to spring, in pipe diameters from 2 to 4 inches
Horizontal Resolution	420 TVL
Focus Point	12" (300mm)
Aperture / FOV	F2.0/90°
Light Sensitivity	0.5 LUX
Lighting	10000 mcd illumination LED x 9 pcs
Auto Upright	Cantilever self leveling design
CCD Type	Color CCD camera assembly available in NTSC or PAL format
Camera Housing	Stainless steel
Camera Lens	Scratch resistant Sapphire
Environmental	Water resistance up to 6 BAR pressure
Temperature Range	Storage: -4°F to 158°F (-20°C to +70°C) Operating: 14°F to 122°F (-10°C to +50°C)
Dimension	1.3"(Dia) x 2.49"(L) (33(Dia) x 75(L) mm) without skid
Weight	0.45lbs(0.205kg)
Shipping Weight	0.75lbs (0.34kg)
Warranty	1 Year
Options	Various skids and aftermarket skids

## E. Shipping Weights

Model	Dimensions and Weights
<b>vCam-5 Control Module</b> (with tool kit)	Dimension: 15.8"(L) x 8.7"(W) x 17.3"(H) (400(L) x 220(W) x 440(H) mm) Weight: 14.3lbs (6.5kg)
<b>Reel without Pushrod</b>	Dimension: 20.1"(L) x 13"(W) x 23.6"(H) (510(L) x 330(W) x 600(H) mm) 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) (510(L) x 330(W) x 600(H) mm)</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) (510(L) x 330(W) x 600(H) mm)</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) (635(L) x 635(W) x 152(H) mm)</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) (635(L) x 635(W) x 152(H) mm)</li> <li>○ Weight: 20lbs (9.1kg)</li> </ul> </li> </ul>

## 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 base and Sonde coil to push rod.</li> <li>• Base kit types - 1 inch D25 for use with D25-M 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>	A carry pouch is included with the control module to carry: <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 Focus Tool</b>	Used on fixed position, non leveling 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	Parameter
<b>Standard Limited Warranty</b>	Camera Heads: 1 year Reels & Pushrod: 1 year Control Module: 1 year Plastic ball skids: 6 months Aftermarket skids: 6 months

## H. Warnings



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 improved 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.

\*Contact your local distributor or service center for more detail and ordering information on aftermarket skids.

\* Distance counter show on LCD should be used for an estimate. Care should always be used by actual locating the camera head with a sonde of pipe and cable locator.

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

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