

USER GUIDE FOR NETmc MARINE *DVCi Cameras*



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Contents

1	Introduction	3
2	Hardware Description and Connections	4
3	System Setup	8
4	Using the DVCi software app	9
5	Connecting to a DVR	11
6	How to Contact NETmc Marine Support	12
Appendix1	Technical Specifications	13
Appendix2	Fault Finding / Quick start (Ethernet)	14
Appendix3	Separate TWP Interface & Preview box	16

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1. Introduction

The NETmc Marine **DVCi cameras** are an exciting new concept in High-Definition imaging for offshore inspection and ROV / diver operations.

Current HD systems are based on broadcast studio level technology - running HD-SDI signals at over a gigabit between expensive (£1200+) connectors, requiring the latest fibre muxes, umbilicals and slipring technologies to bring a signal into the control area - where monitors and distribution all have to be upgraded to get the client what they want - inspection with an HD deliverable.

DVCi is a camera which is designed to integrate into the NETmc DVR product . or can be used for stand alone imaging with the DVCi App.

Video is encoded subsea and sent to the surface digitally to have overlay and audio added . before being chopped into files.

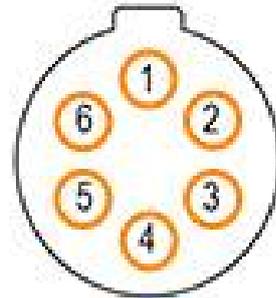
Using the latest mpeg4 compression, the data from the camera is so small it can be carried up a disused video coax or twisted pair cable.

The DVCi camera connects directly into our DVR range where local audio and overlay is added - and can therefore also be controlled by 3rd party inspection software.

Available in DVRiR zoom camera for larger ROVs, DVCiSR for small and micro ROVs, DVCiD for divers (belt pack and small camera) and DVCiP multi camera / pipeline system.

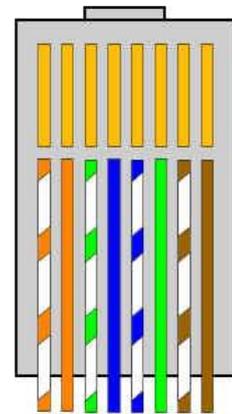
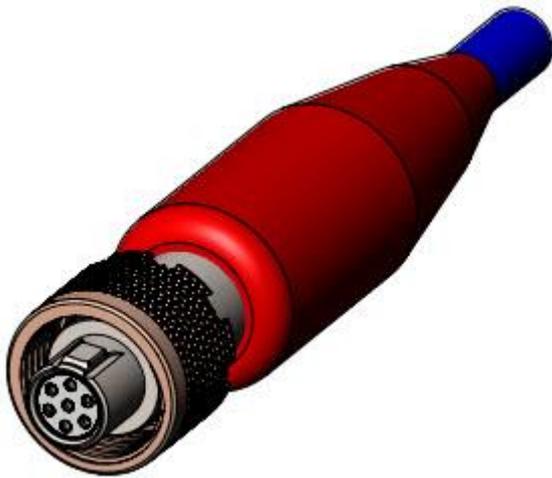
2. DVCiR camera

Ethernet version

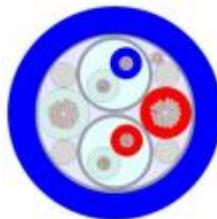


Face view of male bulkhead on camera

CONNECTOR PIN	FUNCTION
1	OV
2	Orange / White
3	Orange
4	+24V
5	Green / White
6	Green



Connector : CRE ~~A~~ sized shell, PLA06F - ideally terminated in a 2 x twp + power cable (CRE13097-3)



Using Twisted Pair camera

Subconn MCIL5F

CONNECTOR PIN	FUNCTION
1	+ 24v
2	0 v
3	Twp
4	GRD
5	Twp

Face view (male)



Diver System

Diver belt pack has 2 connections . 1 x 4 way connector for power and datalink, 1 x 5way connector for connection to camera.



The cable to the camera is a high spec, wide bandwidth cable which can only sourced from NETmc Marine.

The 4way cable has been wired so it's a 1:1 swap-out for many popular composite cameras:

Pin	Function
1	Twp
2	Twp
3	Camera Power + (24v)
4	Camera Power . (0v)

3. System Set-up

Double check all wiring and ensure that the DC supply voltage is being output at the correct connector pins prior to plugging the camera

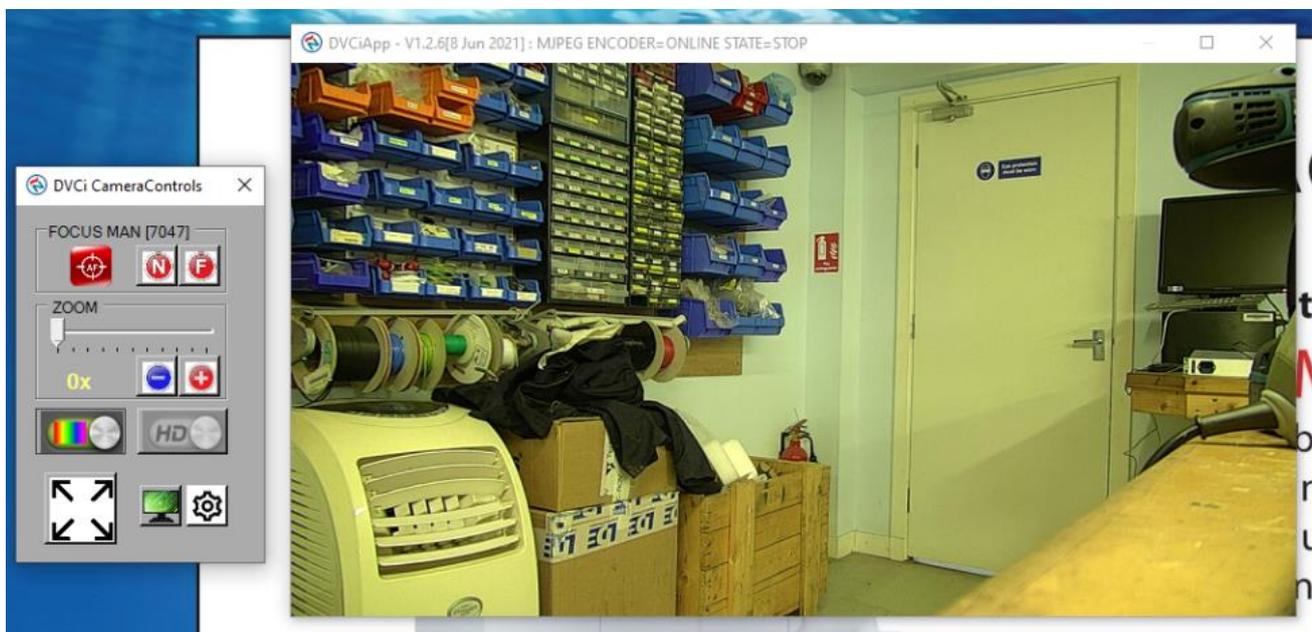
1. A bench test cable is supplied to check the camera -> topside operation before attaching to the ROV or underwater cabling. This requires an external 24v DC PSU (not supplied)
2. With the camera connected and powered up . open the DVRi APP or DVR recording software. The later must be licensed for RTSP recording and DVCi should be selected in the RTSP input setup page.

4. Using the DVCi software app

A shortcut on the desktop will launch the software which controls the *DVCi control app*.



Once the program has started, the operation controls are displayed. From here the user can adjust the focus, change to black and white and adjust the focus.



A live view image is displayed which can be maximised and moved to a different desktop using the controls at the bottom.

(the green monitor icon lets you track where the full screen video render is . as it might be on an output which has no direct monitor . e.g. HDMI connection to a DVR or a video distribution system).

When being used with a NETmc DVR unit . the live video is viewed directly on the DVR so there is no need to use the video render from the APP . so it just becomes a floating tool bar with the zoom / focus controls.



Clicking the gearwheel icon opens the limited setup menu



From top down:

OnTop tickbox ensures that the camera toolbar is always visible and doesn't end up stuck behind another window

DVCi STD or external allows a change of IP address of where to find the camera

Auto-Fade lets the toolbar fade out to a semi or fully transparent version . it jumps back to fully opaque when the mouse is moved

Stream Quality is used to reduce the output from the camera if the link speed is poor . e.g. a very long twisted pair cable, a noisy cable or a congested mux

Reset puts all the settings back to how they previously were

Certificate Icon opens the license manager (a license is required to use the app . but this should be supplied with the purchase or hire of the camera)

Close shuts the setup page

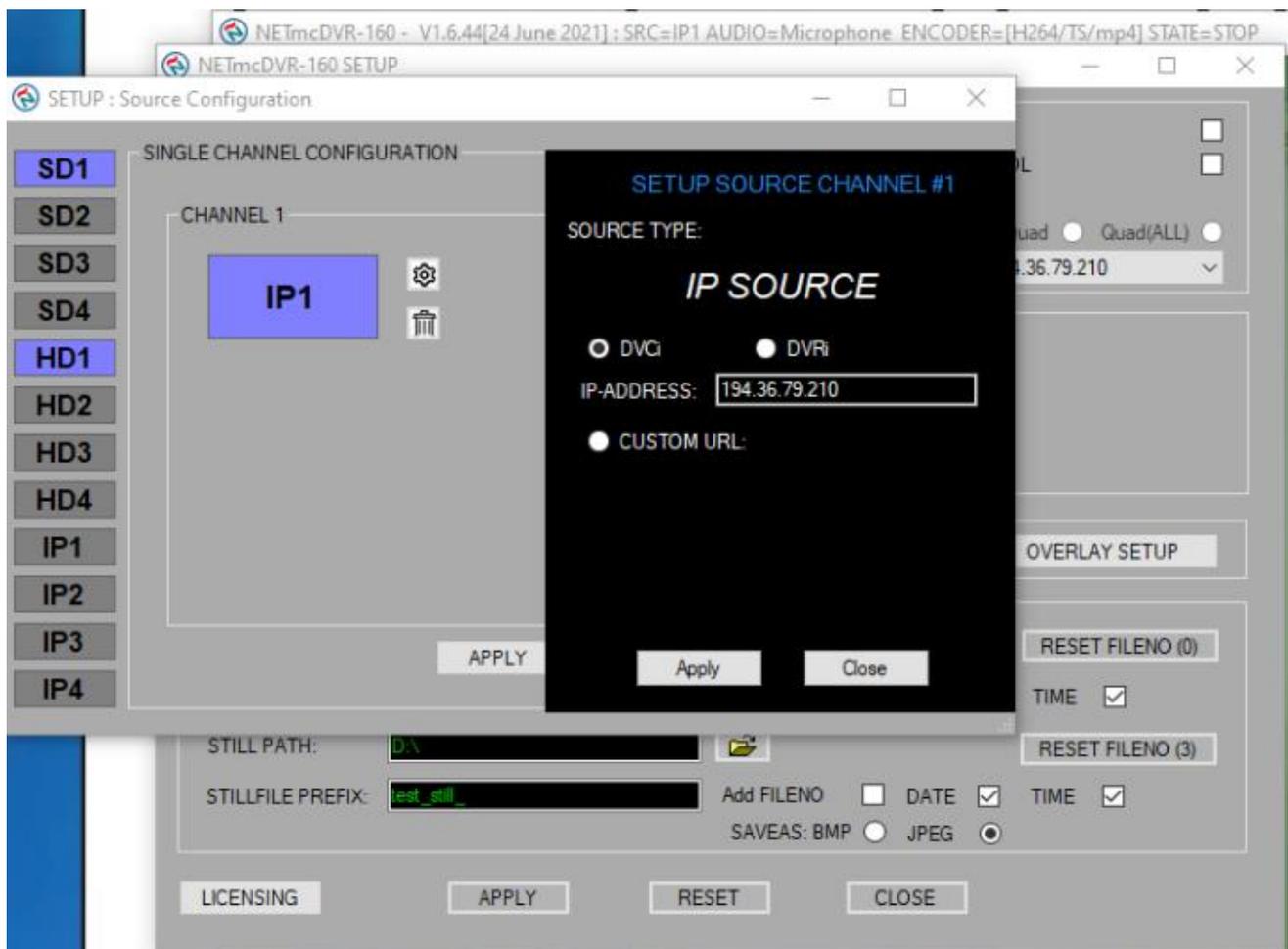
5. Connecting to a NETmc DVR

Connecting the output of the camera to a NETmc DVR is simple

Connect the ethernet from the camera (or output from the TWP converter box) to the 2nd ethernet port on the DVR

Ensure that port on the DVR is set to a static IP address of 194.36.79.200

The RTSP option must be licensed . and in the setup page, DVci option should be selected on the IP source setup



6. How to contact NETmc Marine Support

Should any problems occur with your *Four263 DVR* that are not addressed by this manual please contact our Support Team:

Email: support@netmcmarine.co.uk.

Tel: +44 1771 644001

Should your call be outside office hours, please leave a message on the answering machine, which will be forwarded to one of the support engineers. Although we cannot guarantee 24/7 availability, we endeavour to respond as quickly as possible to any query . regardless of when the support call is made.

Notes:

1. Whilst every effort has been made to ensure that the information contained in this manual is accurate, no liability can be accepted for errors and omissions.
2. Should this product be modified in any way by anyone other than a qualified NETmc Marine employee, then NETmc Marine cannot be held liable for any consequences.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix 1 Technical Specifications

DVCi Camera

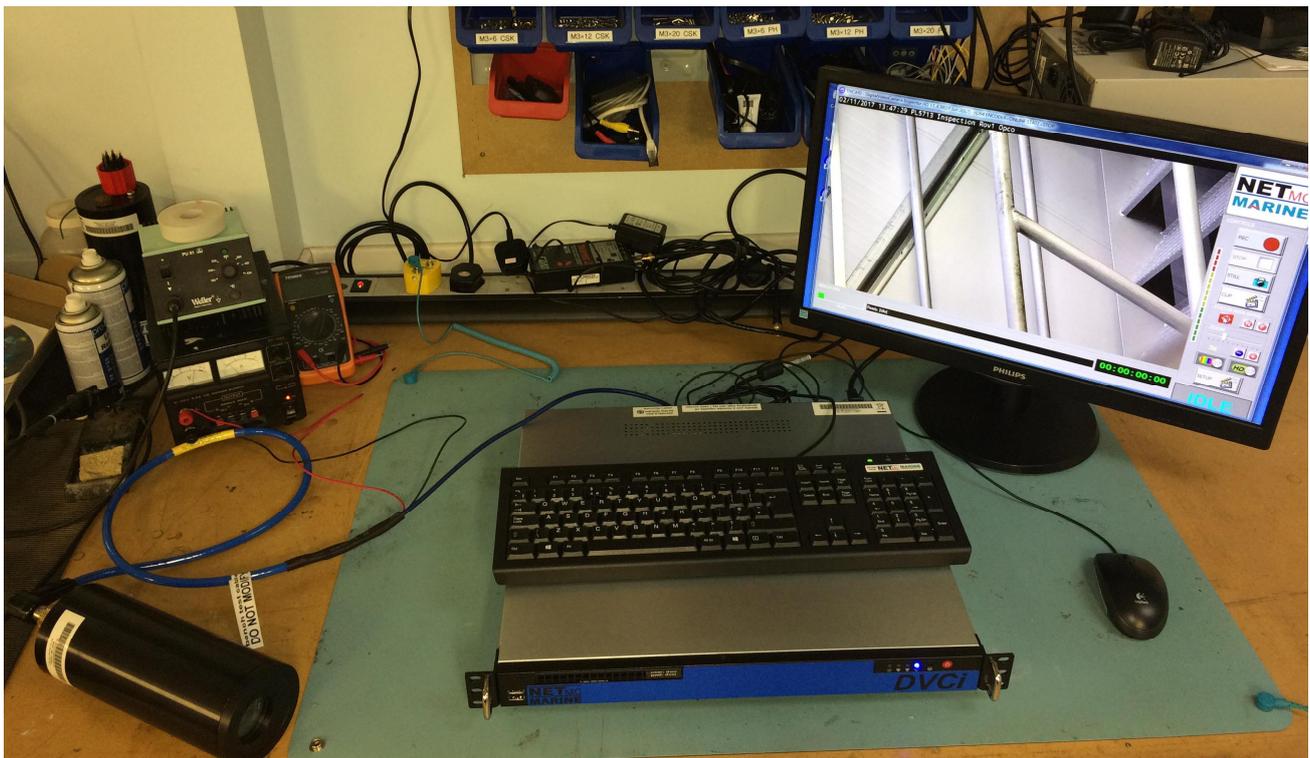
Power Requirements	18 to 36 V DC
Power Consumption	10W
Dimensions	86mm diameter, 225mm long excluding connector
Weight	In Air: 2.0kg In Water: 0.8kg
HD video output	Ethernet / Twisted copper pair
Sensor type	1/3-type CMOS
Optical zoom	10x optical zoom
Focus Control	10mm to 800mm (zoom)

Appendix 2 Fault Finding / Quick start (Ethernet)

Each DVCi system (rental or purchase) is supplied with a bench test cable.



This is a short cable to link the camera directly to the topside unit and allows the connection of 24v (from a bench supply) to power the camera. This should be preserved for testing and another cable used for the underwater splice into the vehicle. (additional cable can be ordered from NETmc Marine)



If there are any concerns about the operation of the camera . a bench test as above should be the first thing to do to restore a level of confidence.

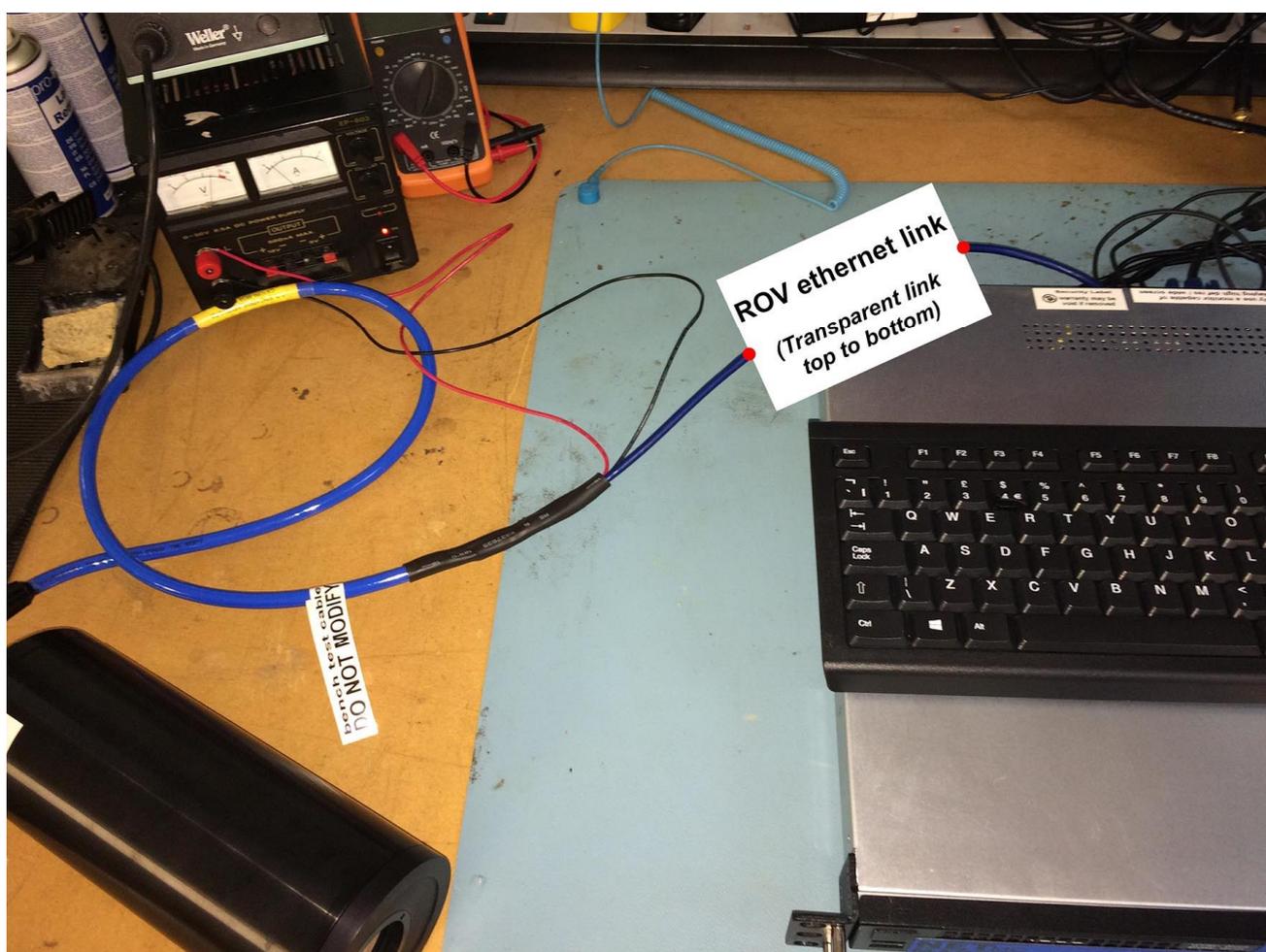
This is also the first thing to do when receiving the DVCi system to prove that its all in working order prior to installing on the ROV.

When installing the system on the ROV, the short cat5 ethernet cable is essentially being replaced by the ROVs umbilical and associated systems . with the camera being powered subsea by the ROV.

This will typically be a fibreoptic umbilical connected to a multiplexor (mux) unit which has Ethernet capability or via a fibre to Ethernet media converter on a dedicated fibre (or one which has been split using wdm/cwdm type technology).

The camera system uses little bandwidth (15mbps max) but it must have a real-time link.

If the mux cards delay traffic, there could be issues with the live viewing of the video, which will ultimately cause system instability.



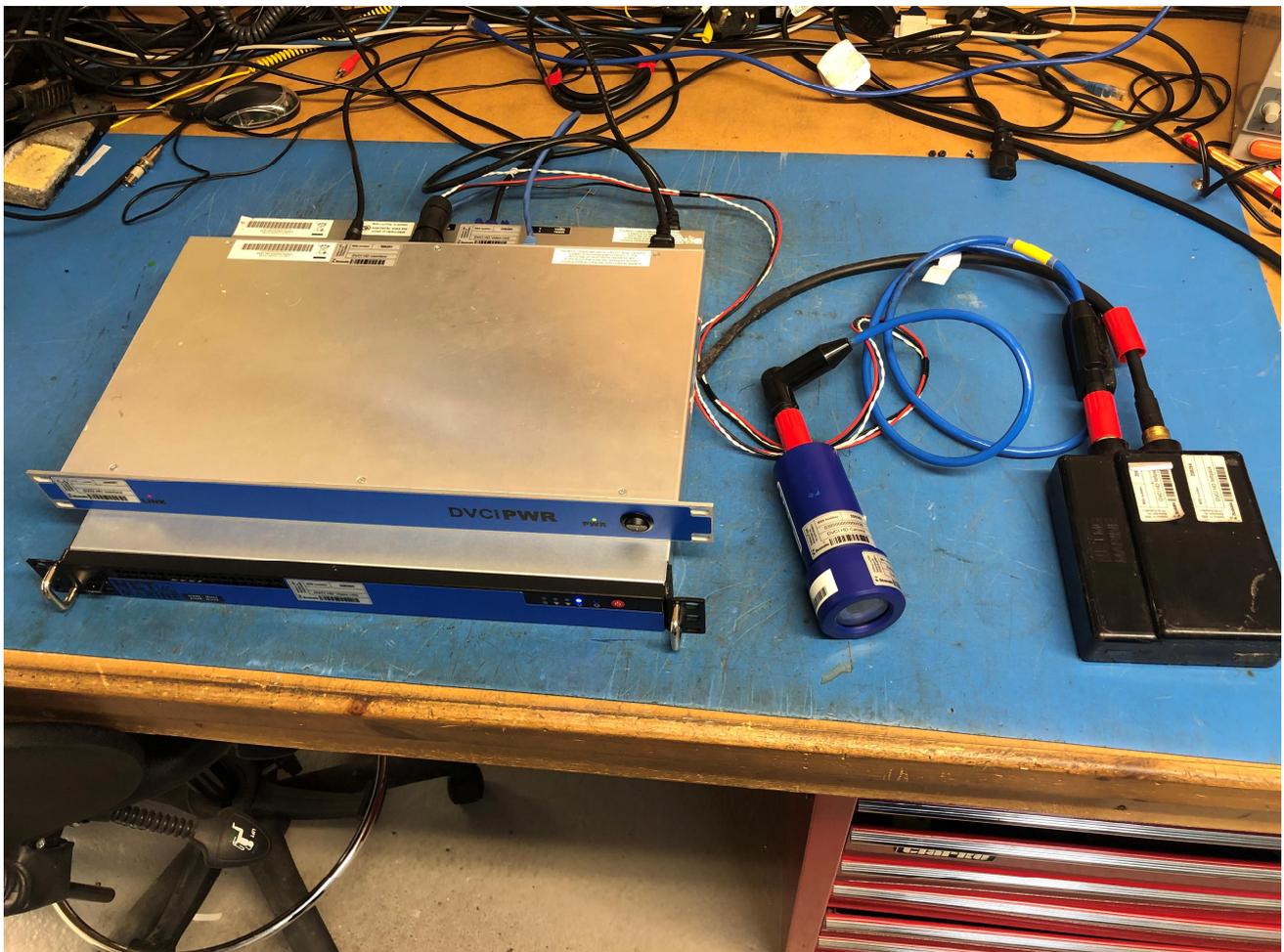
Appendix 3 Separate TWP Interface & Preview box

A client who was using a diver system over twisted pair had requested: %we need the good HD image in the inspection room for the 3.4u but we could also use an image in dive control for the supervisor+

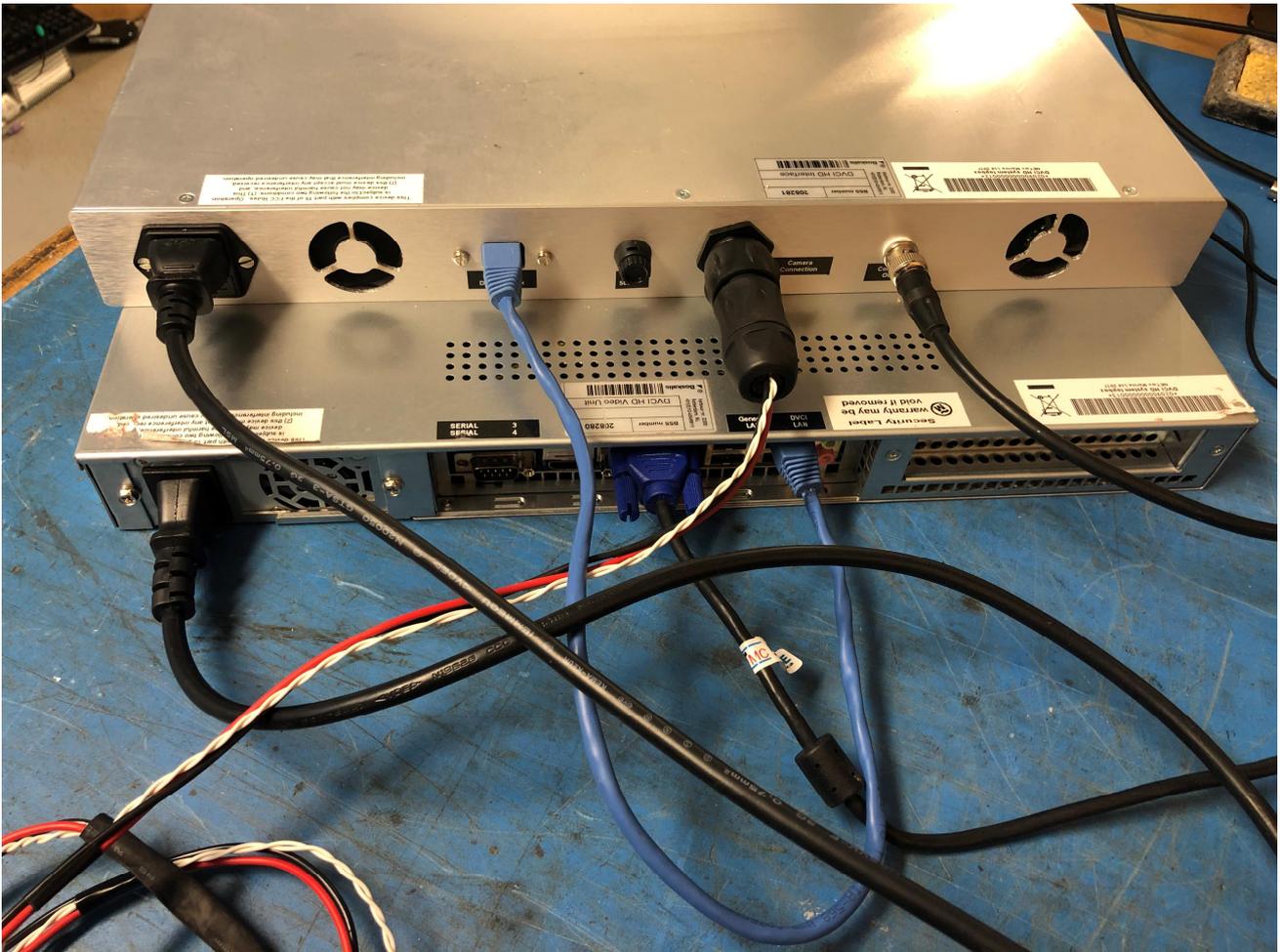
So we created the DVCi PWR box as an optional extra

This box should be sited as close to the TWP umbilical as possible . it has a power supply to power the DVRi and has an Ethernet output which connects to the DVCi windows topside.

The box has an SD composite video output . which can be used for local preview and round vessel distribution.



The example above shows the box sitting on top of the windows topside . but these can be separated as far as the Ethernet signal can be run.



The Souriau connector follows our usual wiring convention as shown on page 6