

SALES SPECIFICATION

For AIR Dive System

Made by



Safe and Efficient Diving

See more dive system / Panels on our website.:

www.safeairdiving.com

1. GENERAL/DESIGN OF DIVING SYSTEM

System are designed by the following requirements:

- Arbeidstilsynet forskrift, best.nr. 703
- Custom design, it will be possible to make design as appropriate to company procedure and work assignments. If there are any change to main design, it must be informed before order.

1.1. DIVING SYSTEM COMPLIANCE

The diving system shall comply with requirements outlined below:

- Breathing gases:
 - AIR
- Arbeidstilsynet forskrift, best.nr. 703
- BS EN 12-245:2009 + A1:2011 - Composite cylinders.

1.2. OPERATIONAL DESIGN

The Diving system is designed to fulfill and exceed the requirements of:

- Surface supplied air diving, after Arbeidstilsynet forskrift, best.nr. 703
- Diving operations to a depth of 50 meters of sea water
- Designed for 2 diver operation where; 1 divers are in water and one standby.
- Lightweight aluminum/composite cylinder gas/air bank with 400 Liters @ 200 bar = 80.000 liters onboard Air supply
- As a minimum, electrical diving support equipment is rated IP66.
- Any electrical equipment on deck is rate according to IP67
- Any submerged or submersible equipment shall be rated to IP68
- All marking and labels on the dive system will be in English

1.3. DOCUMENTATIONS PACKAGE

- Design verification certificate as per the above design specs.
- Functions test certificate for all diving equipment (diver 1, 2)
- Functions test certificate for diving control panel
- Pressure test certificate for gas cylinders/diving control panel and piping systems
- Certificates for each depth gauge and all pressure gauges within the diving control panel
- Flow test certificate for each diver gas system (will be around 500L/min)
- Manuals for all equipment from original equipment manufacturers
- Schematic Drawing of electrical system/pipe systems for diving control panel and gas bank in PDF file format

In total the documents list shall contain approximately 30 documents, certificates & Manuals.

2. DESCRIPTION OF DIVING CONTROL PANEL

- Air dive panel for inshore diving (see drawing and description below)
- 4 mm aluminum plate fascia with foil film schematic overlay of flow and valves within the panel
- Panel plate set in frame 40 x 40 aluminum light pipe
- Tescom model 44-5215-243V (high flow and vent (when “backed off”)
This Regulator are special made for air diving by Tescom in Germany
- Premium quality digital depth gauges, with pressure sensor
- All valves and fittings are Stainless steel where needed,
- All gauges are of stainless steel and come with orifice \varnothing 0.03 mm
- All piping is in Stainless steel, working pressure 200 bar, all are suitable HP for Air
- 200 bar into all lines on the dive panel from air bank

SPECIFICATION ON EACH PANEL SECTION FOR DIVER 1 and 2

- \varnothing 63 mm HP gauges for pressure from bank, Class. 1.0 – , stainless steel, 0 to 280bar
- Ball valve for all HP inlet to panel
- Micron filter in all HP inlet to the panel Tescom
- Tescom Reducing valve, 200 bar inlet, to max 20 bar outlet, model 44-5215-243V
- Shutoff valve for each Tescom regulator (Quarter turn valve)
- Pressure relief valve on all LP lines in the panel / Pressure set to 20 bar, with shutoff valve

Outlet gas line to diver as below:

- Shutoff valve for diver supply
- \varnothing 63 mm LP gauges for pressure on umbilical, Class. 1.0, stainless steel , 0 to 28 bar, with orifice \varnothing 0.03 mm

Design specification for Air diving system

Pneumofathometer gas line to diver as below:

- Needle valve for pneumofathometer gauges, open and close
- Depth gauges (Digital)
 - Scale 0 to 600 metre Class 0.25%/10 cm scale divisions
 - Zero adjustment through front of dial,
 - Supplied complete with point to point calibration certificate
 - Test point on the rear side of panel, ¼" BSP/female
 - Shutoff valve for depth gauge

Similar Air dive panel:



- Measurement's: Wide 880 mm x height 700mm x depth 250mm
- Dive panel will be mounted in alu frame with hingers for access to rear side

FRONT DIVE PANEL SYSTEM SETUP / LAYOUT:



GAS SUPPLY PANEL

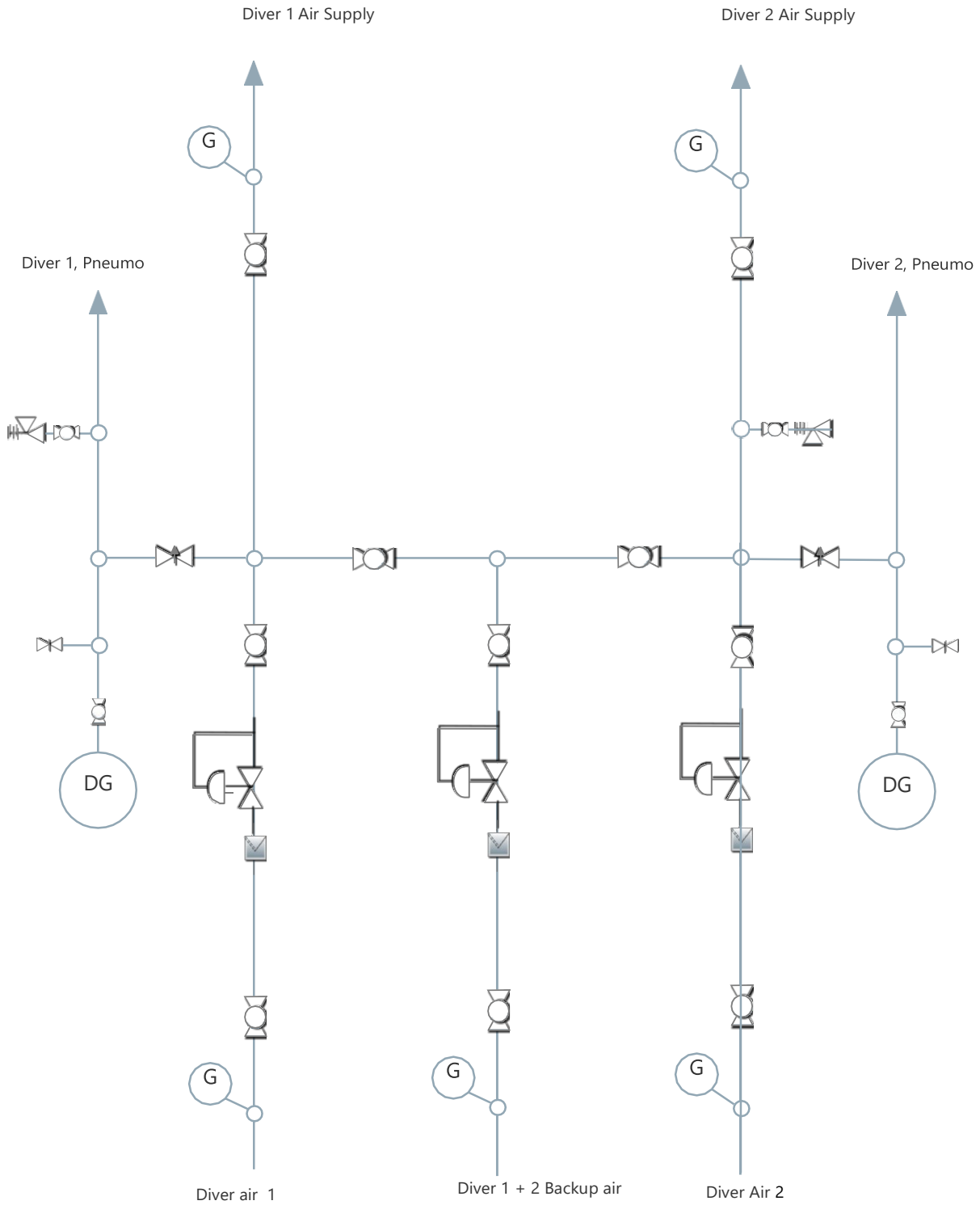
DIVERS MONITORINGS & RADIO SYSTEM

3 HP air lines comes into the dive panel and with the Valves for LP cross over it is possible to use all air cylinders for each diver in water, it gives a good backup, but also all air can be used for the working diver in water if needed.

Easy access to the rear side of the dive panel, front side hinge with lock, can be unlocked and air panel Tilted out for service, the same can be done with the monitor section.

Design specification for Air diving system

SCHEMATIC DRAWING OF DIVE PANEL FOR 2 DIVERS



3. ELECTRICAL EQUIPMENT MOUNTED INSIDE DIVING CONTROL ROOM

- PC for Axsub monitoring & Video recording, with 4G Router, external antenna outside
- Axsub DMS unit, see psec. Sheet for this
- 3 channel Diver main radio, (Diver 1 + Diver 2 + Tender speaker outside) with hand mic press to talk
- Bottom of diving control panel rack 2 pcs. 15" monitor for deck camera (see drawing)
- 1 pcs. 22" / Main monitor for dive cam (Can also be used for ROV / Extra Option)
- 4 pcs. of vessel cameras with infrared lights are mounted outside with monitor inside for diving supervisor, ROV pilot, covering areas outside, cameras: port fwd side, starboard fwd side of vessel, 1 aft deck view, 1 front view, all cameras is rated IP69 and will be heated to prevent frosting
- Decks cam showed on 15" monitor with quad splitter for all 4 cams



- Hard wired speaker for tender on deck
- HDVR / Recorder with 4 channels, recording as below:
 - Diver 1 cam
 - Diver 2 cam
 - All sound from dive radio
- HDVR recorder is to be used as Backup recorder system
- Easy to playback or get video files out on memory stick or other harddrive
- Showed on 15" monitor bottom left side of panel
- UPS system for all dive related electric equipment, minimum 40 min. Supply, see description below:

4. ELECTRIC SYSTEM AND UPS POWER FOR ALL ELECTRIC DIVE RELATED EQUIPMENT

Electrical power is supplied for all divers equipment by one main UPS 3000VA as backup power. The UPS is powered by the LDC 230V supply from onboard generator or shore power.

The UPS setup, with - 3000VA - 230v output – 1800W

In the event of a power failure the UPS will maintain the electronic equipment for a limited period until power is restored (at least 40 minutes for all divers).

In the event of electrical power failure on UPS and main power supply from LDC the communication radio may be operated for a period of time with the internal battery, inside the divers radio, as extra backup.

If any UPS fails, it is possible to switch to main supply from the LDC 230V supply, this is an extra option if the UPS's fails in any way, to make sure that it is possible to supply power to the electrical system, to recover the diver safely.



230V Main Power to the dive system is supplied from the LDCs battery through an inverter system. If the Generator goes dead or is not started, main power will run as long there is power in the LDC battery package. An alert will be shown, and an audible alarm sounded when and if the battery should lose power.

In the event that there is no power from the LDC battery package, the UPS will activate as a backup and will supply all dive related electrical equipment for at least 40 minutes.

5. GAS BANK, ONBOARD GAS SUPPLY SYSTEM:

8 pcs. 50L Composite cylinders, maximum working pressure is 200 bar.

- All piping will be made in stainless steel pipe / fittings
- All cylinders are connected with HP nylon hoses
- Each cylinder are mounted with valve for shutoff (open or Close)
- Onboard filling system, with HP micro filter to ensure clean system
- All cylinders are coated to withstand a submerged environment
- Cylinders are certified after [EN 12-245](#) and comes with certificate for Air

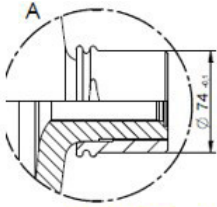
Onboard 400 Liter x 200 bar = 80.000 Liter of onboard Air

5.1. Air cylinders:

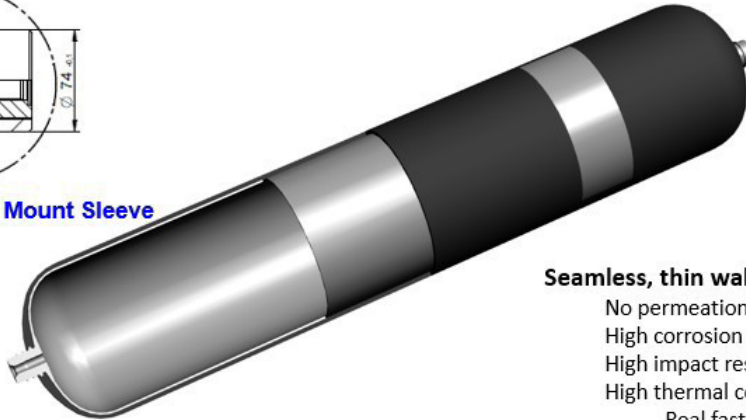
All air cylinders are made of Aluminium covered by composite, it makes them very light in weight.

Calculated from 200 Liter volumen, the total weight is 400 kg less than if steel cylinders were mounted on the boat and the Alu composite cylinder has many other advantages up against the steel cylinder, see below.

Life time 20 years



Option: **Neck Mount Sleeve**



carbon composite shell

- Light weight, high strength
- Corrosion resistant
- Proven in Aerospace & Aviation applications
- Extremely high fatigue life
- No loss of strength over product lifetime

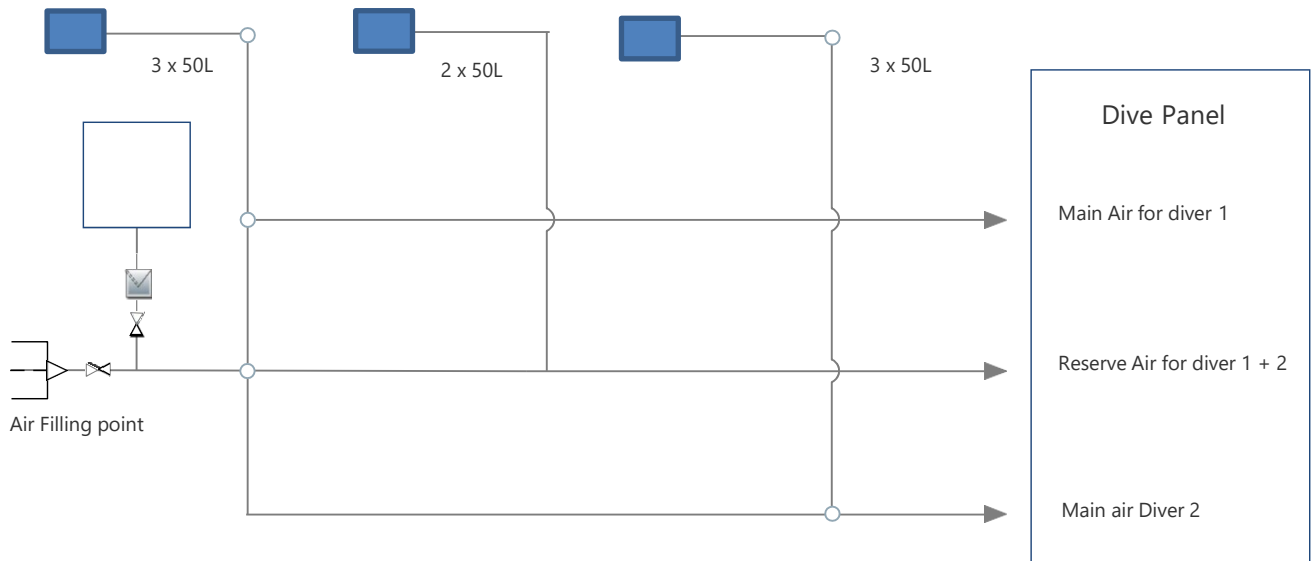
Seamless, thin walled aluminum liner

- No permeation
- High corrosion resistance
- High impact resistance
- High thermal conductivity
 - Real fast fill capabilities
 - Better heat flux in case of a fire
- Proven "leak before break" behavior
- Millions of Type III cylinders in service
- Al Alloy standardized in ISO and CEN

Working pressure is 200 bar / Test pressure 300 bar / min. Bust pressure 600 bar



1.1. GAS PIPE SYSTEM:



1.2. GAS SUPPLY SYSTEM TO DIVE PANEL/DIVERS

- Each diver has an independent main air supply line; and backup gas supply are common for both working divers

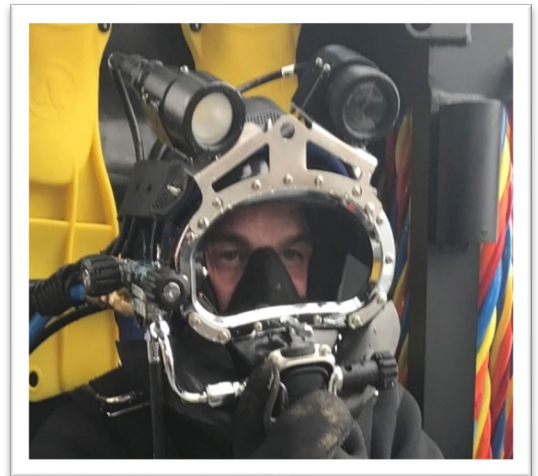
1.3. ONBOARD AIR FOR EACH DIVER:

- Diver 1
 - Main supply 3 x 50L x 200 bar = 30.000 litres AIR
 - Backup supply 2 x 50L x 200 bar = 20.000 litres AIR (Common line with diver2)
- Diver 2
 - Main supply 3 x 50L x 200 bar = 30.000 litres AIR
 - Backup supply 2 x 50L x 200 bar = 20.000 litres AIR (Common line with diver1)
- Line to dive panel is made in 1/4" HP nylon hoses
- One filling point with 1/4" HP Nylon hose, 6 meter to be used for recharging divers air cylinders onboard.

Design specification for Air diving system

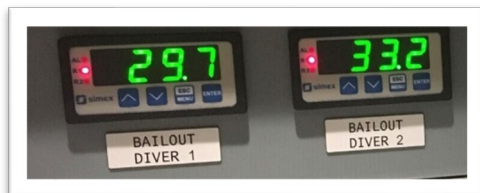
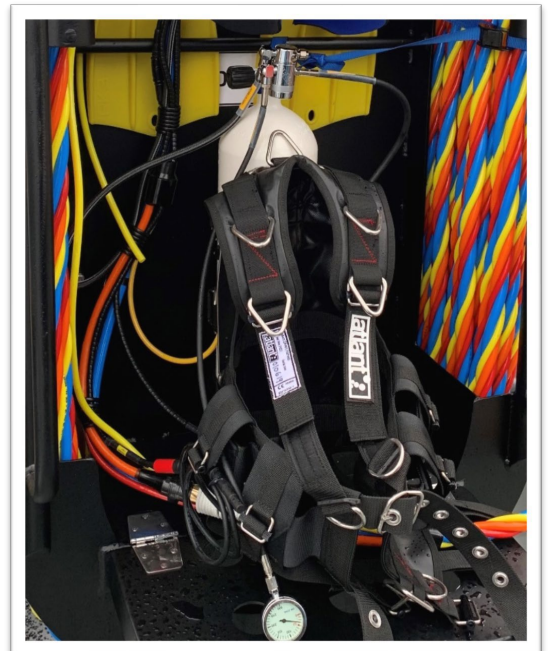
6. Personal equipment for 2 divers.:

- 2 pcs. KM Bandmask, model “KMB28”
- Stainless steel Hat Bracket for Cam & Light
- Diver video color Cam and LED light from Axsub



Divers personal equipment for each diver:

- Atlant Harness
- Apex first stage, with LP hose for KM
- HP hose with Gauge
- HP hose for bailout sensor
- Bailout sensor with subcon connector
- 12L x 200 bar Long Steel Bailout cylinder



- Bailout monitoring on dive panel, reading each divers bailout pressure

Design specification for Air diving system

7. Divers umbilical

- 2 pcs. 3 part Fibron Lite, each 100-meter-long, Air hose + Pneumo hose + Video/COMMS cable
- Mounted with Subcon connectors on divers end & subcon for connection box on Aft deck / surface
- 2 pcs. Top side cable / Hose with connector, from deck to dive control (Video + COMMS cable & Air hose)



Design specification for Air diving system

8. Waterproof monitor:

15" monitor IP68 waterproof on aft deck showing in water operations for standby diver and decks personal.

- 15" monitor
- Video HDMI cable
- Wall bracket for monitor
- 24V DC power supply
- Power cable
- Deck speaker with dives sound



9. Axsub Monitorings system, see below spec.:

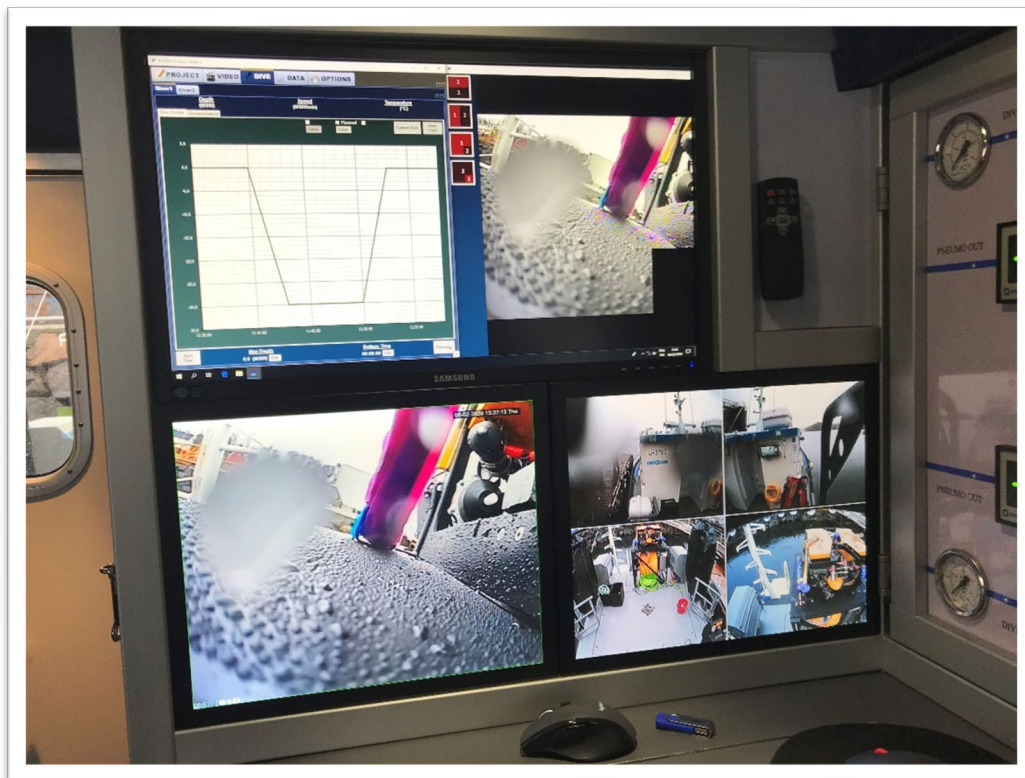
Diver Monitoring's System



Axsub, Diver monitoring & Recording system

Axsub, Diver monitoring system for 2 divers, with spec.

- Model AxViewHD-2V-RM / Rack unit (DMS hardware unit)
- Video format: MPEG4 / AVI
- 2 pcs. separate Depth sensor on harness
- Software for Norwegian dive table / NST / module in DMS
- Main PC for client video recording system with special features,
 - I5 – 512GB SSD - Lenovo, with windows 10
 - Wireless keyboard / mouse
 - 1 TB SSD extern hard drive
- Test and Certificates up to NORSOK
- Video recording and dive planning



See Spec. on Hardware unit and dive cam below:

AxVIEW V-RM

Rackmount Subsea Video & Depth Recorder



The AxVIEW V-RM is designed for Commercial Diving Operations. It is available as a 1-diver or 2-diver system with the possibility to control up to 4 divers on same computer. When used with a computer, it enables Video Recording and Numeric Depth Meter connectivity which will transform the AxVIEW V-RM into a Diving Supervisors Control platform! When fully equipped with a Rackmount Touch Panel PC, this system represents the second generation of our popular AxDDM Diving Data Management System.

Advanced Technology

- Rackmount enclosure & RUGGED components
- Integrated Uninterruptible Power Supply (UPS)
- SAFE Low Voltage Output to the diver (24VDC)
- Audio & Video Inputs for recording
- OSD Technology integrated with diver depth monitoring.

Available Options

- 17" Industrial RM TouchPanel PC (RM-OPT-ITPC17-1TB)
- Rackmount Keyboard Drawer (RM-OPT-KBT-1U)
- LCD Monitors (RM-OPT-2S07, RM-OPT-1S19-QUAD)
- Advanced Decompression Module with DECO Tables DCIEM, USNAVY, MT92, CUSTOM (SW-DECO-____)
- Battery Packs of 5 or 15 Ah (B05Ah-24VDC / B15Ah-24VDC)

Ordering Information

AxVIEW1V-RM	Rackmount Subsea Video & Depth Rec. Sys (Diver 1)
AxVIEW1V-RM-2	Rackmount Subsea Video & Depth Rec. Sys (Diver 2)
AxVIEW1V-RM-3	Rackmount Subsea Video & Depth Rec. Sys (Diver 3)
AxVIEW1V-RM-4	Rackmount Subsea Video & Depth Rec. Sys (Diver 4)
AxVIEW2V-RM	Rackmount Subsea Video & Depth Rec. System (D1 & D2)
AxVIEW2V-RM-3/4	Rackmount Subsea Video & Depth Rec. System (D3 & D4)
AxVIEW3V-RM	Rackmount Subsea Video & Depth Rec. Sys (D1, D2 & D3)



www.axsub.com

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Specifications

General

Video Inputs :	1 per diver
Video Outputs (BNC) :	2 per diver
Audio Input (BNC) :	1 (2 connectors)
L.E.D. Output :	1 per diver
L.E.D. Dimmer :	1 per diver
L.E.D. LB/HB Switch :	1
L.E.D. ON/OFF Switch :	1 per diver
Camera ON/OFF Switch :	1 per diver
Operating Temp. (°F) :	-4 to 122 (-20 to 50°C)

Mechanical

Dimensions (in) :	19 x 12.5 x 3.25 (48 cm x 32 cm x 8.3 cm)
Weight (lbs):	9.6 (4.4 kg)

Electrical

Power Inlet 1 :	100-240 VAC 50/60Hz
Power Inlet 2 :	24VDC (Lead Acid Battery)

AxDDM Software (V series only)

Operating System :	Win7, Win8.1 or Win10
Hard Drive Space :	500 MB minimum
Video Recording :	1 GB/h or recording (STD)

Features: Pre-Dive, Video Recording & Snap-shots with OSD, Real Time Dive Profiles with Dive & DDC Decompression, Gas Analysers Trend & Recorder, Dive Report for each diver. Our software can be download from our website

