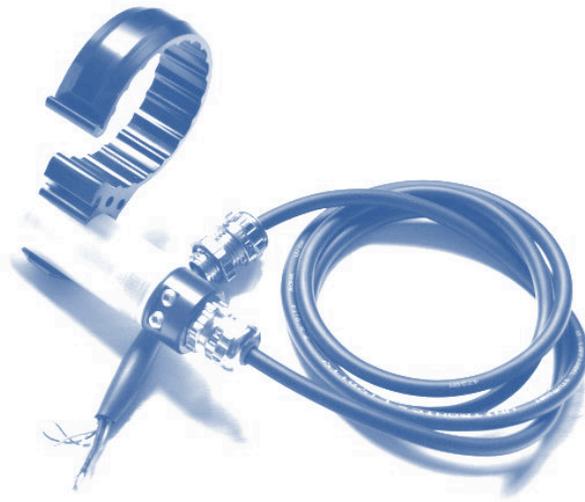


HUD-A

HEADS-UP DISPLAY



MANUAL

(revision 1/2015)

CONTENTS

1. INTRODUCTION.....	3
2. TECHNICAL CHARACTERISTICS	3
3. TECHNICAL DESIGN.....	4
4. SWITCHING ON AND START OF WORK.....	4
5. PO2 DISPLAY MODE.....	5
6. CALIBRATION.....	7
7. JOINT OPERATION WITH AV1F AND AV1ECCR.....	8
8. STORAGE.....	10

1. Introduction

Heads-up display HUD-A (further - HUD-A) – fully autonomous device for PO₂ indication and control via 3 independent channels. The device can operate with standard oxygen cells, providing output voltage in the range of 5-30mV in the open air at standard atmosphere pressure.

2. Technical characteristics

Number of measuring channels / indication: 3

PO₂ measurement accuracy: 0.1 bar

Indication: 3 channels with 5 LEDs each

Independent indication: 2 LEDs (red and green) with connection to AV1f or AV1eCCR

Battery: AAA battery 1.5V

Uninterrupted operation duration: not less than 100 hours

Tested depth: 250 meters

Calibration: air or oxygen

Operation temperatures range: -10C..+45C

Dimensions: diameter 24mm; length 80mm

Channels' input impedance: 50kOhm

3. Technical Design



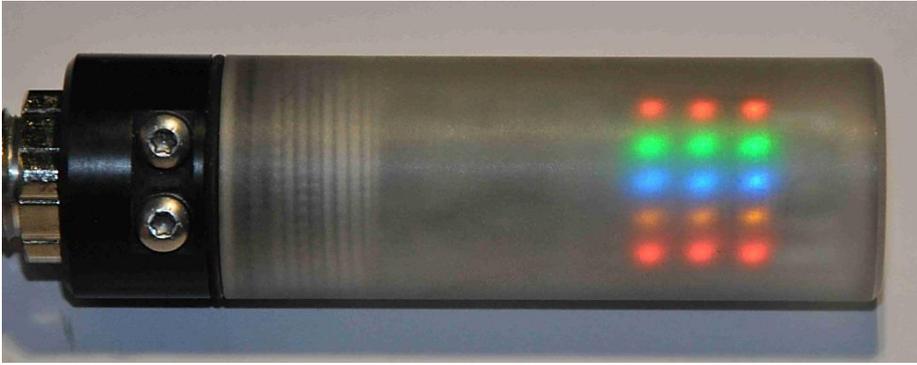
1. Hi-resistant polycarbonete protective display
2. Wet contacts
3. Sealed cable
4. Two sealing O-rings

4. Switching On and Start of Work

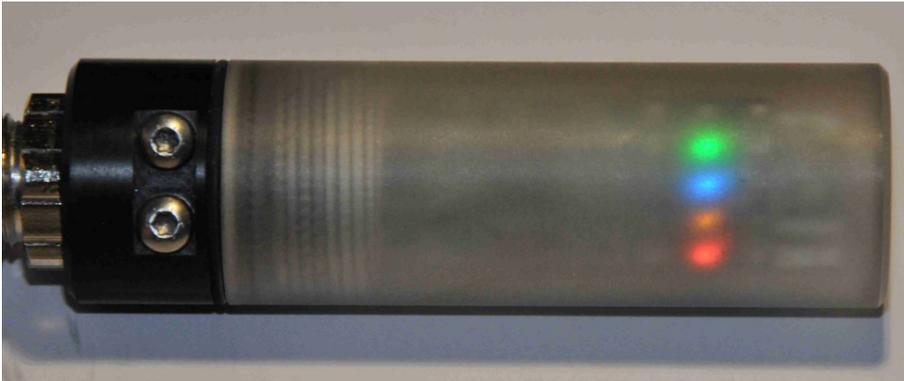
To start the work turn off the protective display 1 and insert AAA battery 1.5V into the slot (mind the polarity!).

Ensure that sealing O-rings 4 are clean and are not damaged. Lubricate them with a thin layer of silicone grease prior to placing the protective display back.

HUD-A will automatically switch on and internal testing will start upon inserting the battery. In case of successful testing all indicator LEDs will flash three times.



and battery charge level will be displayed for a few seconds.



Replace the battery, if the charge level is lower than yellow LED.

Upon testing completion HUD-A will move to PO2 display mode.

HUD-A will automatically switch off on surface in case of staying inactive for 3 min 30 sec.

30 seconds before switching off the device will warn about this with intense LEDs' flashing.

To switch the device from sleeping mode it's recommended to close wet contacts 2 with any metallic subject or by a wet finger.

In underwater mode HUD-A will also immediately switch on.

5. PO2 display mode

Matrix of 3 columns with 5 LEDs each is used to display PO2 in HUD-A. Each LED can either beam uninterruptedly, or flash with 1Hz frequency. Each of 3 columns displays PO2 of each own channel in accordance with the table.

PO2	Indication	
<0.2	Low red is flashing	
0.2...0.45	Low red is glowing	
0.45...0.65	Low red is glowing Yellow is glowing	
0.65...0.75	Yellow is glowing	
0.75...0.85	Yellow is flashing	
0.85...0.95	Yellow is glowing Blue is glowing	
0.95...1.05	Blue is glowing	
1.05...1.15	Blue is flashing	
1.15...1.25	Blue is glowing Green is glowing	
1.25...1.35	Green is glowing	

1.35...1.45	Green is flashing	
1.45...1.55	Green is glowing Red is glowing	
1.55...1.65	Red is glowing	
>1.65	Red is flashing	

6. Calibration

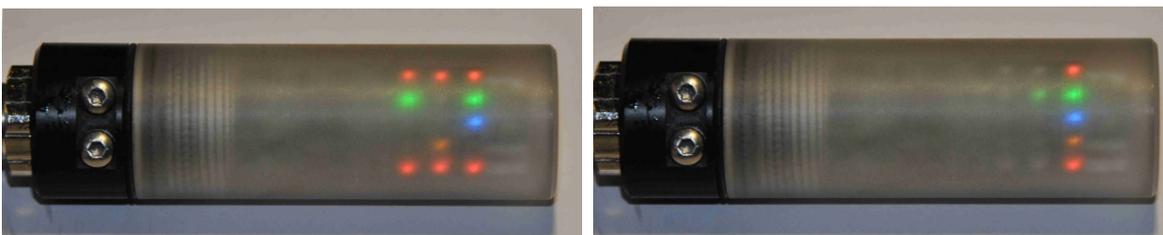
To switch calibration on it is recommended to close wet contacts 3 times in the PO2 indication mode within 1.5 seconds.

This will require some skill, and possibly, you will not succeed from the first trial. Try several times.

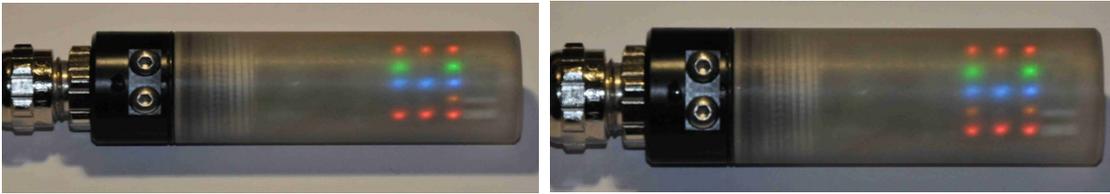
This procedure is designed on purpose to avoid any possibility of calibration mode switch on by mistake when swimming on surface.

When switching calibration mode on HUD-A will display one of two calibration options: by air or by oxygen.

In case of choice of calibration by air figures 2 and 1 will alternatively flash with 2Hz frequency.



In case of choice of calibration by oxygen figures 9 and 8 will alternatively flash.



To switch between 2 options – single short closing of wet contacts.

Upon choosing the calibration option mode close wet contacts for 1 second to start calibration process.

Upon this indicator will intensely flash, and calibration process will start. Upon successful calibration HUD-A will automatically switch to PO₂ indication mode and store the calibration coefficients in a nonvolatile memory.

ATTENTION! IMPORTANT!

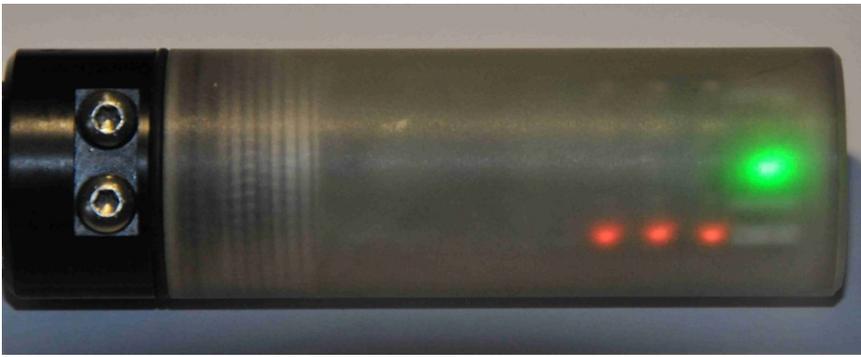
HUD-A does not have pressure sensor. Calibration is done based on the assumption that ambient pressure is equal to 1,000 mbar. When calibrating is done in high-altitude conditions or at low ambient pressure, PO₂ indications will be higher as pro rata.

When calibrating at ambient pressure equal more than 1,000 mbar, PO₂ indications will be higher as pro rata.

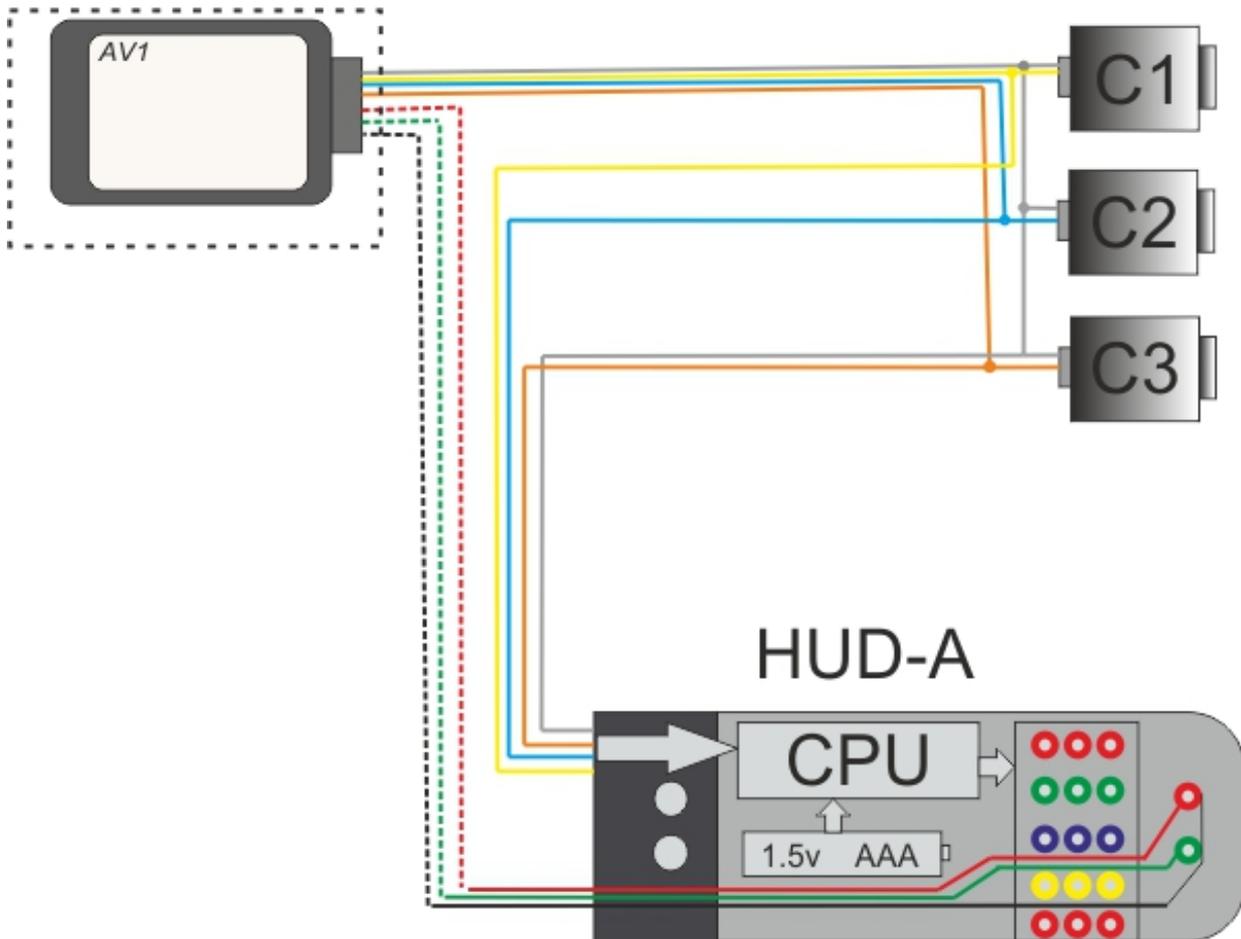
Take into account this information when planning your dives!

7. Joint operation with AV1F and AV1eCCR

HUD-A has 2 separate independent LEDs (red and green) to connect the device as a common dependent HUD. These indicators do not depend either on HUD-A electronics or on the inside, and are managed exclusively by the external dive computer.



HUD-A connection scheme:



ATTENTION! IMPORTANT!

When connecting HUD-A to the rebreather it is strongly forbidden to cut off sealed cable end 3. This cable end is an integral part of HUD-A. Its damage can affect the device' operation and put HUD-A out of order.

8. Storage

With long intervals of usage it is recommended to take the battery off to avoid complete discharge and electrolyte leakage.