



Ryan Swaine <viamed.ryan.swaine@gmail.com>

RE: Oxygen sensors

1 message

Stampi-Bombelli Valentina <stampibv@ipe.mavt.ethz.ch>
To: "ryan.swaine@viamed.co.uk" <ryan.swaine@viamed.co.uk>

14 May 2021 at 14:15

Dear Ryan,

Sorry for the confusion, but I would actually like to order 4 sensors, not 1 as I stated in my previous email.

Thank you and have a great day!

Best,

Valentina

From: Main Account <viamedinbox@gmail.com> **On Behalf Of** Ryan Swaine

Sent: 14 May 2021 14:31

To: Ashwin Kumar Rajagopalan <ash23win@gmail.com>

Cc: Steve H <steve.hardaker@viamed.co.uk>; Stampi-Bombelli Valentina <stampibv@ipe.mavt.ethz.ch>

Subject: Re: Oxygen sensors

Dear Ashwin & Valentina

Thank you for your email.

At your convenience, please let me know your company contact, delivery and invoice details so we can create an account for you? If you can let me have an idea of the quantity you will require, we can put together a quotation for you. Please can you also let me know which of the following currencies you would prefer: USD, EUR or GBP.

I look forward to hearing from you and please let me know if you have any questions. Kind regards

Ryan

Ryan Swaine
International Sales Manager
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On Fri, 14 May 2021 at 11:46, Ashwin Kumar Rajagopalan <ash23win@gmail.com> wrote:

Dear Steve,

Thank you very much for your email and for taking care of this.

I have cced Valentina, who is a doctoral student at ETH Zurich. She will be coordinating with you folks about the order.

Valentina: As I mentioned to you earlier, I have been in touch with Steve who has provided a lot of information on the oxygen sensors and how we can use them (please have a look at the email thread).

Thanks again.

Best

Ashwin

On Fri, May 14, 2021 at 9:26 AM Steve Hardaker <office@viamed.co.uk> wrote:

Good morning Ashwin,

I hope this provides the information that you need to get you started, the only thing that we haven't yet discussed is pricing and quantities required.

I have cc'd my colleague Ryan in on this so that he can provide that and set you up with a trading account to allow us to send you a quotation and take purchase orders. We offer sensors on a banded discount structure for larger quantities on a single order, so if you can advise Ryan what kind of volumes you are looking at per order and what you see as the long term requirement, he will be able to assist.

Ryan is also knowledgeable in sensor specifications and performance, so should also be able to assist with any queries you may have, but by all means feel free to contact me if Ryan is not available at any point.

Regards,

Steve

Steve Hardaker
Technical Support Manager
Viamed Ltd.

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On Thu, 13 May 2021 at 19:19, Ashwin Kumar Rajagopalan <ash23win@gmail.com> wrote:

Hi Steve,

Again, thanks a ton for this detailed information. I really appreciate it and now I understand more clearly. I guess I have a bare minimum knowledge based on what you have shared over the last couple of days to get started without any issues.

Regarding the order, yes it would be great if you could put me in touch with the export team. The order and the payment will be made from Switzerland (ETH Zurich).

Thanks for all your assistance. I wish you a wonderful evening,

Best

Ashwin

On Thu, May 13, 2021 at 4:45 PM Steve Hardaker <office@viamed.co.uk> wrote:

Hi Ashwin,

With regards to testing, the simplest way, and the method we use here, is to just connect the sensor to a voltmeter on a mV scale and measure the voltage. You don't need an external load as there is one inside the temperature compensation circuit on the sensor.

The sensor should read between 9.0mV and 13.0mV at standard temperature and pressure in air, anything outside of this is outside of the original specification. Note though, that there may be up to 0.5mV difference in output between when the atmospheric pressure is very high or very low, so don't be too quick to consider them out of spec., try testing them on another day.

To test more thoroughly, you can measure the output in 100% oxygen and then for any given concentration, the output should be:

output in O2 (mV) / 100 * current O2 percentage

You could use an oxygen monitor to test the sensor by seeing if the sensor calibrates, but this will lead to false results as some monitors will happily calibrate with a sensor that is way out of spec.

With regards to shipping to Switzerland, we have a UK and an Export sales department, so we can do that but only if the payment and order comes from Switzerland; if you want to order from the UK and pay in sterling, we would have to deliver to a UK address. If you want to order from Switzerland, please advise and I will pass you over to the Export Sales Manager.

If you have any queries, please feel free to ask.

Regards,
Steve

Steve Hardaker
Technical Support Manager
Viamed Ltd.

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On Wed, 12 May 2021 at 11:50, Ashwin Kumar Rajagopalan <ash23win@gmail.com> wrote:

Hi Steve,

Thank you very much for all the details and I guess I understood what you mean.

Just two final questions, if I may ask:

1. For testing purposes, would you have something that already comes with a display. Again low cost once are desirable. When we test the sensor and make sure it performs well, we would just go with the sensor element and have our microcontroller that would take care of the conversion from voltage to concentration.
2. The setup is being built by my colleagues in Switzerland. Would it be possible to ship the sensors there?

Thanks again for all your help. Appreciate it.

BEst

Ashwin

On Wed, May 12, 2021 at 10:36 AM Steve Hardaker <office@viamed.co.uk> wrote:

Hi Ashwin,

I forgot to mention in my previous email, the 3 points that you detailed are all exactly correct.

Some of the more basic analogue analysers are little more than a sensor attached to a low gain amplifier to scale it to 21mV and feed that directly into a panel meter on the mV scale. You can also run oxygen into it and set the potentiometer to read 100% for greater accuracy.

Regards,

Steve

Steve Hardaker
Technical Support Manager
Viamed Ltd.

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On Tue, 11 May 2021 at 18:52, Ashwin Kumar Rajagopalan <ash23win@gmail.com> wrote:

Hi Steve,

The information you have provided is excellent. Thank you very much for all the details. Let me summarize what you said and please correct me if I am wrong:

1. In practise, I will get your sensor. First perform an air calibration assuming 21 % oxygen in the atmosphere, whatever reading I get, I scale it to 21 mV.
2. After that whatever voltage I read from either a voltmeter or a microcontroller is basically the oxygen concentration.

3. The ideal way would of course be to perform a two point calibration (to ensure linearity).

The only part I did not understand is the following. I would have the oxygen from a concentrator coming out from a product tank. The output from the tank is at ambient pressure. I would have a line that would basically be attached to the cannula. Where would you position the sensor? I see that you have the adapter. Do I have to create a T junction, where one port is attached to the sensor and the other goes to the patient? Please advise.

Thanks again for your help.

Best

Ashwin

On Tue, May 11, 2021 at 5:57 PM Steve Hardaker <office@viamed.co.uk> wrote:

Hi Ashwin,

If you are looking for a good, low-cost sensor that is easy to work with, I would recommend the R-22MEDV oxygen sensor, which is commonly used in medical applications, with a 3-pin Molex connector, see attached datasheet. If better suited, this is also available with a 3.6mm jack plug as model R-17MEDV.

A galvanic sensor is a basic fuel cell that increases its voltage output linearly in relation to the partial pressure of oxygen at the sensing surface. The starting output in air for this sensor is 9.0 mV - 13.0mV, so given a known starting voltage in air, it is easy to calculate the oxygen concentration from the output. By amplifying the output voltage from the sensor to read 21.0mV on a panel meter, you can create a simple oxygen analyser.

Ideally, calibration should be done in medical grade oxygen, as if you only calibrate to air, any errors in that calibration get magnified up to 5-fold as the output rises toward 100% oxygen. This may present a problem if you are using air-separation oxygen concentrators as you will likely not achieve over 95% oxygen, so you may be limited to a single point air calibration and accuracy will be affected. However, even with a worst case error of 1% in the air calibration, the maximum error shouldn't be over 5%.

The sensor will need calibrating every 8 hours to compensate for any drift in sensor output which can be caused by changes in atmospheric pressure.

Sensors work best when used in a steady flow at ambient pressure, something around 2-5 L/min would be ideal as higher flow rates can generate a back-pressure on the sensor, which causes the output to rise. We have an adapter cap that is designed specifically for use with oxygen concentrators, which cost £5.50+VAT each and can be seen here:

<https://www.viamed.co.uk/uk/?uid=&sessionid=&g=&i=2&mobile=&page=productview&cat=353&subcat=414&productid=0120120>

The R-22MEDV sensor is priced as follows:

p/n 0110021 - Oxygen sensor R-22MEDV

1-off: £42.00+VAT

2-off: £38 .00+VAT

3-10: £36.00+VAT

11+: £34.00+VAT

Carriage is FOC, we have all of these in stock. If you want to place an order, you can call our sales office on 01535 634542 or email sales@viamed.co.uk

I hope this helps, if you have any further queries, please feel free to ask.

Regards,

Steve Hardaker
Technical Support Manager
Viamed Ltd.

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On Tue, 11 May 2021 at 15:36, Ashwin Kumar Rajagopalan <ash23win@gmail.com> wrote:

Hi Steve,

Thanks for getting back to me and thanks for the information.

We do not have an oxygen analyzer. My idea was if we could get the sensor and if the output from the sensor is either a voltage or current, we could hook it up to a microcontroller and do the conversion from voltage/current to oxygen composition. Would this work?

If not, we would like to have a sensor/analyzer attached to a small tank that would enable us to monitor oxygen composition real time. Please let me know what you think and let me know if you need further information.

Thanks in advance for your assistance.

Best

Ashwin

On Tue, May 11, 2021 at 3:12 PM Steve Hardaker <office@viamed.co.uk> wrote:

Good afternoon Ashwin,

Thank you for your enquiry via our website. The oxygen sensors that we supply are designed as direct replacements for existing oxygen sensors used on oxygen monitors. They are all different prices and will only work on compatible oxygen monitoring devices.

Do the oxygen concentrators that you are working with have an oxygen analyser attached? If they do, please can you tell me the model number of the sensor that it uses and I will provide you with pricing for a compatible sensor.

If you are looking to buy oxygen analysers for use with an oxygen concentrator, we have a number of options available, as can be seen on our website.

Please let me know a bit more about what you are trying to achieve and I will see how I can best help you.

Regards,

Steve Hardaker
Technical Support Manager
Viamed Ltd.

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Hello,
This is Ashwin from London. Some of my colleagues and I are trying to work on oxygen concentrators in India and we were looking for galvanic oxygen sensors. We would ideally like to measure concentrations of 80-95%. I see that you have quite a number of sensors for this purpose. Could you please let me know if this is possible and what would be the approximate cost of this sensor. I thank you in advance for your assistance.

Best
Ashwin