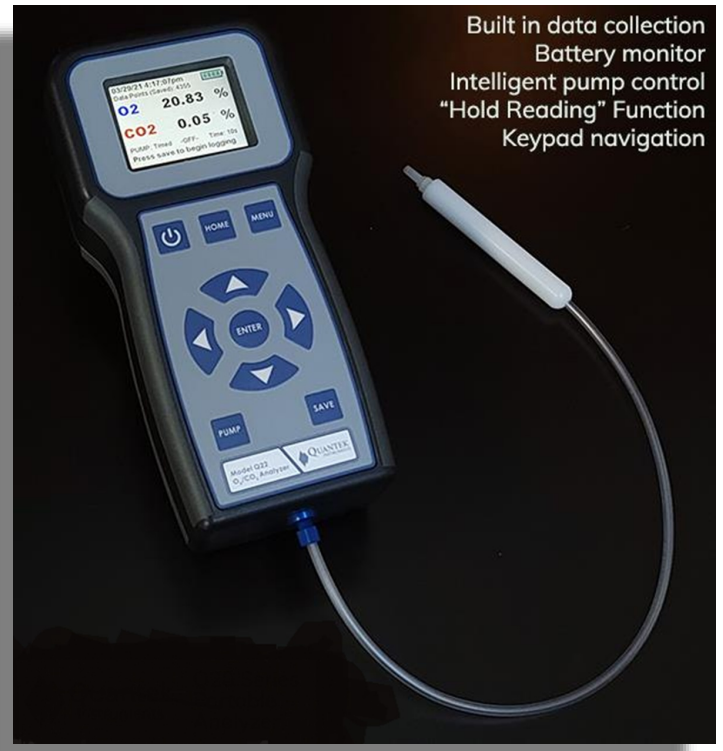


Test for O<sub>2</sub> and/or CO<sub>2</sub> levels in packages, processes, and containers

- ❖ *Intelligent*
- ❖ *Durable*
- ❖ *Lightweight*
- ❖ *32-bit microprocessor*
- ❖ *On-board storage*
- ❖ *Available for O<sub>2</sub>, CO<sub>2</sub>, or both*
- ❖ *Test packages, processes, and containers*

Analyzed Gases	
Q20	<b>Oxygen only</b>
Q21	<b>CO<sub>2</sub> only</b>
Q22	<b>Oxygen and CO<sub>2</sub></b>



*Please see last page for additional photos*

## Overview

The Q20 series of analyzers feature a color display, menu driven setup, calibration functions, a built-in sample pump, and data collection (up to 100,000 values).

This unit combines a fast response sensor for oxygen in a small, lightweight (under 2 lbs.) package for maximum transportability and ease of use in all types of gas measurement applications. The unit is battery operated and can be easily moved or transported as needed. Low power consumption enables up to 15 hours of operation before re-charging (charger included) is required. The unit has a rugged miniature diaphragm pump with adjustable timing functions to operate only when sampling.

The Q20 Series is available with several sampling inlet configurations to suit many different monitoring applications, including a sample probe/needle assembly for package testing, or a straight tube probe with flexible tubing attachment. The latter attachment is ideal for insertion into various processes, containers, and bio enclosures.

## Package Sampling

The Q20 Series is equipped with fast response sensors, and is ideal for rapid, routine package testing. With our standard sample probe/needle assembly, this unit is used for the measurement of O<sub>2</sub> in many types of modified atmosphere packages (MAP), or “gas-flushed” packaged foods such as:

- ❖ meats,
- ❖ snack foods,
- ❖ fresh vegetables,
- ❖ coffee,
- ❖ nuts,
- ❖ fruits,
- ❖ dairy products,
- ❖ and ready-to-eat packaged foods including salads.



*Pictured: Q20 in carry case, with package testing accessories*

MAP packaging can be done with a single gas such as nitrogen or a mixture of gases such as nitrogen, oxygen, and carbon dioxide. Analytical testing of the package is valuable to determine if the concentrations are correct and whether the package has leaked.

If your gas mix is incorrect, your product quality may be seriously degraded before it even reaches the consumer. Gas flushing isn't enough – you have to test the finished product to ensure the correct mix of gases is in your package.

## Hold Function

The microprocessor based “hold” function takes the guesswork out of testing. The reading automatically freezes on the display for 5 seconds when the test is complete, providing clarity of results to the operator.

## Data Collection

With built-in data collection, values can be stored either automatically (with the hold function enabled), or with the touch of a button for each individual sample. For continuous testing, data collection can be set to store values at predetermined intervals from 1 second to 99 seconds\*. Storage capacity is available to record 100,000 values, complete with date/time stamp. These values can be exported to a USB thumb drive as a “CSV” file.

\* For example, if the interval is set to 10 seconds, the unit will store readings for 11.5 days continuously.

## Process Spot Checks

The Q20 is perfect for spot checks of processes which must be checked routinely during the day, such as cell culture incubators. Portability, quick response, ease of use, and reliability make it a good choice for all types of monitoring applications.

This unit can easily be configured to connect probes with tubing lengths from 1 to 10 feet. Connection to the sampling port includes a removeable filter to trap moisture or dirt particles.

## Electrochemical O<sub>2</sub> Sensor

The Q20 features our 5 year oxygen sensor, reducing downtime and replacement costs.

Our long-life, proprietary design yields accurate low-level measurements down to 0.1% oxygen and measures full range up to 100% level. The sensor response is 5 seconds to 95%. The output is compensated for ambient temperature variations. The sensor is not heated, has no moving parts, and requires no routine maintenance. CO<sub>2</sub> does not interfere with the oxygen reading – even 99% CO<sub>2</sub> will have no effect on the oxygen reading.

## Sampling Probe Assembly

The sample probe is one piece construction to minimize internal volume and to eliminate fittings which can leak. Inert tubing extends from the front panel fitting through the probe to the needle hub. The probe tip is fitted with a disposable filter for dirt and moisture removal. The removable needle has a tip with a side-port hole to prevent plugging.

The syringe needle attached to the end of the probe is inserted into the package through an adhesive-backed foam septum. With the pump on, sample is drawn through the probe and tubing into the oxygen sensor, through the pump and out to vent. The sensor signals are converted to concentration values and displayed on the front panel. The probe, tubing and sensors have been designed with minimal internal volume to reduce the sample volume needed, important for small package measurements. Neither sensor is heated, so the pump can be located downstream of the sensors and does not contribute to the volume requirement of sample. A disposable syringe filter can be inserted on the end of the probe to remove any moisture and dirt from the sample gas.

## Sampling Pump

The internal miniature diaphragm pump has menu driven adjustable timing functions to operate in a number of timing configurations, including preset cycles. The pump is rated for 5000 hours, or about 5 years in a typical package testing environment.

## Rechargeable Battery

Totally sealed, long-life Ni-Mh battery pack accepts full or partial charging cycle. Charger module with cord/plug assembly plugs into standard 115/240 Vac, 50-60 Hz outlet for charging, with international “mains” prongs to fit outlets worldwide.

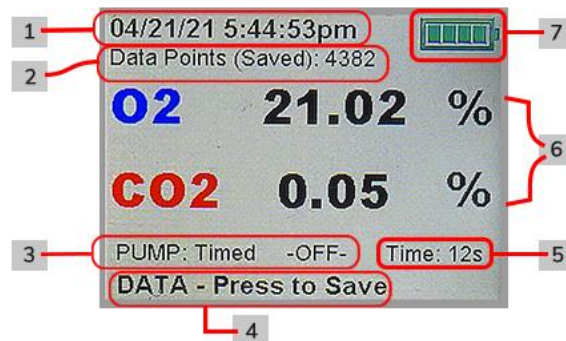
## Microprocessor/Electronics

Micro-processor based electronics are controlled by a 32-bit microprocessor, for sensor signal processing, battery charging, pump timing, data collection and on/off control provide high accuracy and reliability with minimal component use to reduce size and cost.

### **Comparison Chart**


	Q20	Q21	Q22
Oxygen sensor	YES		YES
CO <sub>2</sub> sensor		YES	YES
Range	0-25% OR 0-100% Oxygen	0-20% or 0-100% CO <sub>2</sub>	0-25% OR 0-100% Oxygen 0-20% or 0-100% CO <sub>2</sub>

### Menu Screen



1. **Date and Time** can be set by the user under “Advanced Options”
2. **Total data points** that are stored in the onboard memory.
3. **Pump Mode** (Timed/Cycling/Continuous)
4. **Data Mode** (Single/Auto/Interval)
5. **Pump timer** that counts run time (and rest time when cycling on and off)
6. **Percent O<sub>2</sub> and CO<sub>2</sub>**
7. **Battery life indicator** will show a lightning bolt (icon) when charging, and a plug icon (icon) when running on DC power

## Technical Specifications – Sensors, Accuracy

SENSORS	Oxygen Sensor	Carbon Dioxide Sensor
Type:	Proprietary Electrochemical	NDIR
Range:	0-25% or 0-100%	0-20% or 0-100%
Sensitivity:	0.1% O <sub>2</sub>	0.1%; .01% for 0-20% range
Minimum Detection Limit:	0.1% O <sub>2</sub>	0.1% or .01% CO <sub>2</sub>
Response time:	5 seconds to 95% of the final reading, 17 seconds to final reading	15 seconds to 95% of the final reading, 20 seconds to final reading
Accuracy:	± 0.1 % O <sub>2</sub> or ± 1% of reading, whichever is greater	± 0.2% CO <sub>2</sub> or ±1% of reading, whichever is greater (for 0-100% range)
Calibration Controls	Menu driven adjustments for all calibration functions, including SPAN and ZERO adjustment for O <sub>2</sub> and CO <sub>2</sub>	
O <sub>2</sub> Calibration	Weekly; set with room air set to 20.9% O <sub>2</sub> .	
CO <sub>2</sub> Calibration	Every 12 months; calibration gas recommended.	
Sample Pump	Miniature diaphragm type with menu driven timing. Flow rate ~ 5 cc/sec.	
Sampling Assembly	Sample Probe/Needle holder with luer needle, disposable filter, 1/16 O.D. PTFE tubing. Optional rigid tube/ plastic tubing connection to front panel.	
Readout Display	Color display, TFT 320x240 pixels, 2.6 in diagonal	
Battery	Internal 6 pack AA NiMH 2000 mAh – expected run time ~ 12 hours under average duty cycle.	
Size	8W x 2H x 7D in. (203 x 51 x 178 mm)	
Weight	2 lb. (0.9 Kg)	
Warranty	2 years, parts and labor	
Standards		
Included Consumables	For package testing applications: Sample probe assembly, 2 luer fit needles, 200 foam septas, (2) particulate filters, (2) Moisture Guard filters. For process applications, process probe with tube extension.	
Origin of Goods	Our products are manufactured in the U.S.A.	