

1 YEAR
WARRANTY



User's Guide

Shop online at

omega.com®

Ω OMEGA®

omega.com

e-mail: info@omega.com

For latest product manuals:

omegamanual.info

ISO 9001
CERTIFIED
CORPORATE QUALITY

STAMFORD, CT

ISO 9002
CERTIFIED
CORPORATE QUALITY

MANCHESTER, UK

MADE IN TAIWAN



DOH-20D Hand-held Dissolved Oxygen Meter



OMEGAnet® Online Service
omega.com

Internet e-mail
info@omega.com

Servicing North America:

U.S.A.:
ISO 9001 Certified
One Omega Drive, P.O. Box 4047
Stamford, CT 06907-0047
TEL: (203) 359-1660
FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Bergar
Laval (Quebec) H7L 5A1, Canada
TEL: (514) 856-6928
FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

U.S.A. and Canada: Sales Service: 1-800-826-6342/1-800-TC-OMEGA®
Customer Service: 1-800-622-2378/1-800-622-BEST®
Engineering Service: 1-800-872-9436/1-800-USA-WHEN®

Mexico:
En Español: (001) 203-359-7803
FAX: (001) 203-359-7807
e-mail: espanol@omega.com
info@omega.com.mx

Servicing Europe:

Czech Republic: Frystatska 184, 733 01 Karviná, Czech Republic
TEL: +420 (0)59 6311899
FAX: +420 (0)59 6311114
Toll Free: 0800-1-66342
e-mail: info@omegashop.cz

Germany/Austria: Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
TEL: +49 (0)7056 9398-0
FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom: One Omega Drive, River Bend Technology Centre
ISO 9002 Certified
Northbank, Irlam, Manchester
M44 5BD United Kingdom
TEL: +44 (0)161 777 6611
FAX: +44 (0)161 777 6622
Toll Free in United Kingdom: 0800-488-488
e-mail: sales@omega.co.uk

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

TABLE OF CONTENTS

1	INTRODUCTION	1
2	DISPLAY AND KEYPAD FUNCTIONS	2
2.1	Display	2
2.2	Keypad	3
3	REPARATION	4
3.1	Inserting the Battery	4
3.2	Connecting the Probe	4
4	CALIBRATION	5
4.1	DO Calibration in Air (with ATC) -% Saturation Mode	5
4.2	DO Calibration in mg/L Mode	7
4.3	Temperature Calibration	8
4.4	Clear	8
5	MEASUREMENT	9
5.1	Taking Measurement	9
6	SET FUNCTION	10
6.1	HOLD FUNCTION	10
6.2	MEMORY FUNCTION	10
7	DISSOLVED OXYGEN PROBE	11
7.1	Dissolved Oxygen Principle	11
7.2	Probe care and Replacement	12
8	TROUBLESHOOTING	13
9	SPECIFICATIONS	14
10	APPENDIX	15

1 INTRODUCTION

Thanks for purchasing portable DOH-20D. The portable DO meter, based on microprocessor, is designed for better user convenience and easy operation.

DOH-20D is equipped with Custom LCD which can display Dissolved Oxygen(DO) (either mg// or % saturation) and temperature, It can save 16 set temperatures and DO values and communicate with a computer through RS232C option to save the measured values. The exterior rubber case enhances user convenience.

DOH-20D consists of DO probe, replaceable membrane case, electrolyte, DC 9V battery, and instruction manual.

Read this manual thoroughly before using DOH-20D.

2 Display and Keypad

2.1 Display

The LCD has a primary and secondary display.

- The primary display shows the measured DO value either in mg/L, ppm or %, depending on units of measurement selected.
- The secondary display shows the temperature and the calibration mode.



Fig. 1. Full LCD Screen

2.2 Keypad

The large membrane keypad makes the instrument easy to use. Each button, when pressed, has a corresponding indicator on the LCD.

Some buttons have several functions depending on its mode of operation.

Key	Function
POWER/ESC	<ul style="list-style-type: none">▸ Powers on and shuts off the meter▸ Calibration mode is escape
HOLD/MODE	<ul style="list-style-type: none">▸ Freezes the measured reading▸ Calibration mode selective several sub-menu
CAL	<ul style="list-style-type: none">▸ Calibration mode▸ Store values recall(2sec. press)
ENTER	<ul style="list-style-type: none">▸ Selects the measurement parameter▸ To confirm calibration
↑ (UP)	<ul style="list-style-type: none">▸ Calibration mode Scrolls up values
↓ (DOWN)/STORE	<ul style="list-style-type: none">▸ Store values in mg/L values with its corresponding temperature values in the memory▸ Calibration mode Scrolls down values▸ % Saturation set

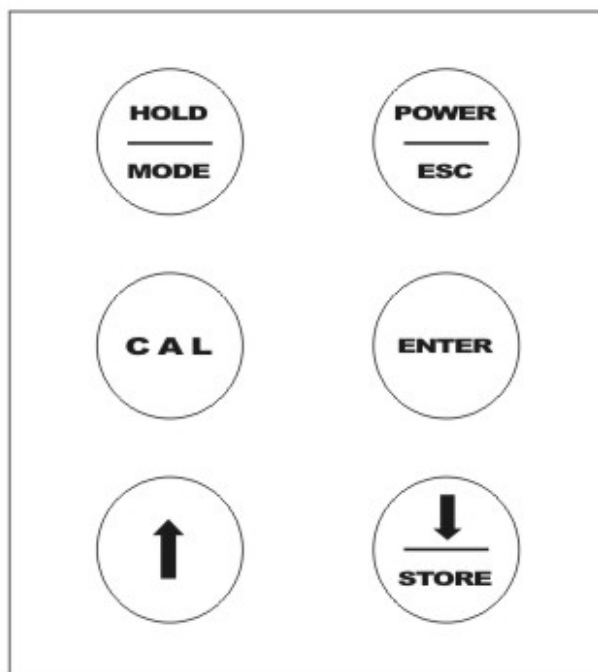


Fig. 2. Keypad

3 REPARATION

3.1 Inserting batteries

Batteries are delivered from a warehouse in state that is not combined.

- ① Take off rubber cover of meter.
- ② Open if pull meter backside's battery box downward.
- ③ Assemble according to polarity after take off vinyl of offered battery DC 9V.
- ④ Close battery box and cover rubber cover.

3.2 Electrode connecting

Measurement part of electrode can be damaged in case handle on hand because is consisted of very thin act. Must change damming up by act that strangeness is new because occur on electrode if is damaged. Desire to handle to take care enough.

- ① Solve final election by vote of electrode lead wire.
- ② Combine electrode to connector of meter top portion region.
- ③ Combine thread hard.(desire to confirm conjointness ordinary times.)

4 CALIBRATION

The amount of oxygen dissolved in water will depend on its temperature, atmospheric pressure and its salinity. While the pressure and salinity values are manually entered into the instrument, the temperature is being measured by the probe. It is therefore very important that the temperature is calibrated if necessary prior to the DO calibration.

The measurements of % Saturation of DO will linearly affect the measurement for DO in mg/L. Hence calibration in % Saturation of DO should be carried out first. This is described in the following section.

Toggle between % Saturation and mg/L mode

ENTER key press selects the measurement parameter. Press **MODE** to toggle between % **Saturation mode** and **mg/L mode**

4.1 DO Calibration in Air (with ATC) – % Saturation

mg/L or % measure mode at stable display

- ① **CAL** key press. **Cal / %**, flickering
- ② **DOWN(↓)** key press. Display Automatic calibration **20.9%** and 3 point flickering.
If the value is unstable and keeps changing, wait until it is stabilized, and then press **DOWN(↓)** key again.
- ③ **ENTER** key press set.
- ④ Automatic return to mg/L or % measure mode

Taking DO measurement

- * Press **ESC** Key to go to measure mode at each stage.
ESC Key press return to mg/L or % measure mode at All calibration mode.

Salinity Calibration (Sea water calibration)

mg/L or % measure mode

- ① **CAL** key press. **Cal** / %, flickering
- ② **MOED** key press(1 step). **Cal** flickers and **SAL** appears below.
- ③ **UP(↑)/DOWN(↓)** key press. Change to the target value.
(salinity unit ppt, reference value 0.0ppt)
- ④ **ENTER** key press set.
- ⑤ Automatic return to mg/L measure mode

* See Appendix **A**

* Press **ESC** Key to go to measure mode at each stage.

ESC Key press return to mg/L or % measure mode at All calibration mode

Barometric Pressure Calibration

mg/L or % measure mode

- ① **CAL** key press. **Cal** / %, flickering
- ② **MODE** key press(2 steps). **Cal** flickers and **Hg** appears below.
- ③ **UP(↑)/DOWN(↓)** key press. Change to the target value.
(Pressure unit mmHg, reference value 760mmHg)
- ④ **ENTER** key press set.
- ⑤ Automatic return to mg/L % measure mode

* See Appendix **B**

* Press **ESC** Key to go to measure mode at each stage.

ESC Key press return to mg/L or % measure mode at All calibration mode

4.2 DO Calibration in Known DO value - mg/l Mode

For more precise DO measurement, this calibration is required.

Zero point Calibration

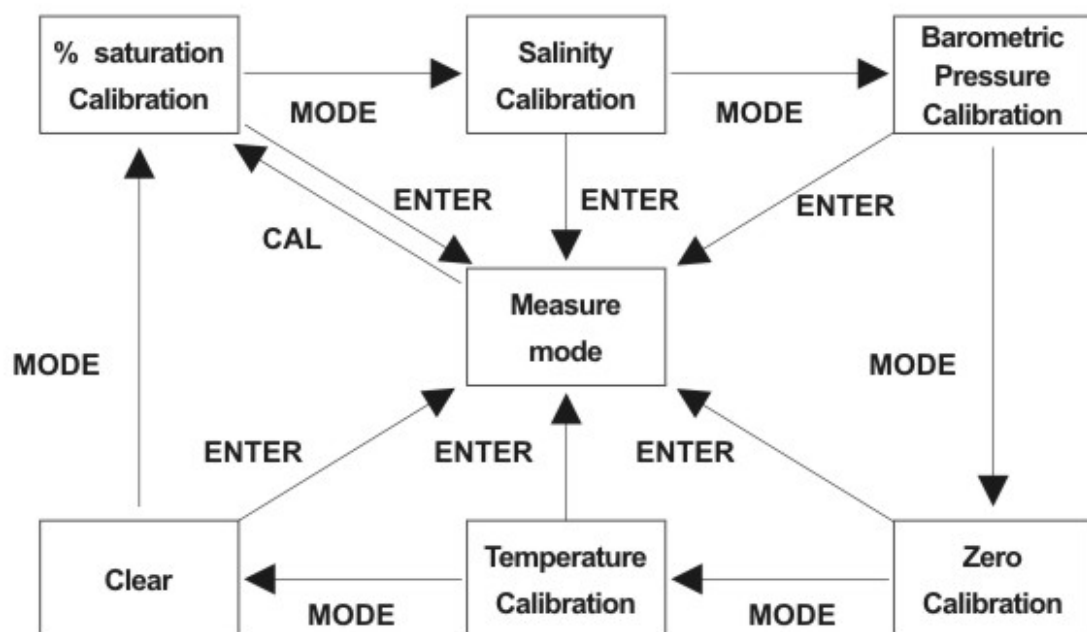
Whenever DO probe is replaced, make sure to do this calibration for more precise measurement.

- ① Prepare a solution whose DO is 0mg/L. Dip the probe into the this solution
- ② **CAL** key press. Cal / %, flickering
- ③ **MODE** key press(4 steps). Press the button until **Cal / MIN** flickers.
- ④ mg/L or % measure mode at stable display
- ⑤ **DOWN(↓)** key press. Automatic calibration 0.00mg/L
- ⑥ **ENTER** key press set.
- ⑦ Automatic return to mg/L or % measure mode

* Zero solution method ; fresh water 500ml + Na₂SO₃ 5g

* Press **ESC** Key to go to measure mode at each stage.

ESC Key press return to mg/L or % measure mode at All calibration mode



4.3 Temperature Calibration

DO in mg/L is dependent on temperature, so it is first necessary to calibrate or verify the temperature reading. Temperature calibration is accessible from the mg/L measurement mode.

In mg/L measure mode (**30 minute in known steady state temperature**)

- ① **CAL** key press. **Cal / %** , flickering
- ② **MODE** key press(5 steps). Press the button until **Cal / °C** flickers.
- ③ At the stable display
- ④ **UP(↑)/DOWN(↓)** Press the key to change to the target value.
- ⑤ **ENTER** key press set.
- ⑥ Automatic return to mg/L or % measure mode

* Press ESC Key to go to measure mode at each stage.

Warning! It's is precisely set when delivered. Do not use this except when there is difference in temperature during new DO probe exchange.

4.4 CLEAR(Reset)

This allows you to clear all parameters programmed above and re-set it to factory default values.

- ① **CAL** key press. **Cal / %** , flickering
- ② **MODE** key press(6 steps). **Cal** flickers and **CLr** appears.
- ③ **DOWN(↓)** Press. **Cal** flickers and **YES** appears.
- ⑤ **ENTER** key press set.
- ⑥ Automatic return to mg/L or % measure mode

* Press ESC Key to go to measure mode at each stage.

* **NOTE :** Last calibration value of zero value is remembered.

5 MEASUREMENT

During measurement, care must be taken not to allow the membrane of the DO probe touch any surface.

When dipping the probe into the sample, make sure the tip of the probe is completely immersed.

5.1 Taking measurement

- ① Switch on the meter press the **POWER** key.
- ② To toggle between % Saturation and mg/L measurement mode, press the **ENTER** key.
- ③ Calibration. (See calibration **4.1. DO Calibration in Air (with ATC) –% Saturation Mode**)
- ④ Dip the probe into the sample.
- ⑤ Waiting stable display. (about 3minute)
- ⑥ Reading display mg/L

NOTE: Stir the sample gently to create a homogenous sample(flow rate: over 5cm/sec). Be sure to tap probe very gently to remove air bubbles. Air bubbles will cause errors in the reading.

6 SET FUNCTION

6.1 HOLD FUNCTION

This feature lets you freeze the value of the DO reading for a delayed observation.

- ① **HOLD** key press. To hold a measurement, press the HOLD key while in measurement mode. "HOLD" will appear on the display.
- ② **HOLD** key again press. To release the held value, press HOLD again. Continue to take measurements.

6.2 MEMORY FUNCTION

Using when store measurement value in measurement mode, display done mg/L and temperature at the same time 16 store can .

- ① **DOWN(↓)/STORE** key press. Store cost that become display present. Save number is expressed in top portion indication department (can confirm if is pressing **DOWN (↓)/STORE** key long).
- ② Is erased automatically by long point period of ten days in case 16 point exceed.
- ③ Press **CAL** key for 2 seconds. NO.1 of stored data is open.
- ④ Can confirm stored value because pressing **UP (↑)/DOWN (↓)** key.
- ⑤ Press **ENTER** key. All stored values are erased. If press **ENTER** key long, **ALL del** is expressed.
- ⑥ Is changed to measurement mode automatically.

* In case it is no save value, pressing CAL key for 2 seconds does not go in save confirmation state.

* Press ESC Key to go to measure mode at each stage.

7 DISSOLVED OXYGEN PROBE

7.1 Dissolved Oxygen Principle

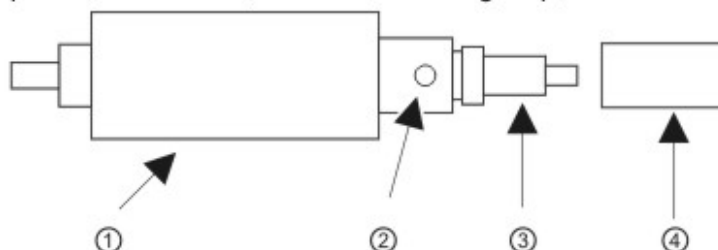
DO probe is based on galvanic measuring method and designed for fast response and stability for measurement. The film penetration type probe selectively passes the oxygen in the water and the oxygen goes through electrolyte layer to reach to the minus probe where deoxidation happens to generate current. Generally, the galvanic reaction is much faster than polarographic reaction, so it happens in a few sec. if the probes are perfectly parallel, i.e., in a stable condition or in a specific condition. However, when the probes are designed by considering measurement and stability in terms of the structure of probes, it takes about 15 min. due to other effects such as outside temperature. But over 95% stability is obtained after 3 min. and the measurement error is just trivial, so 3 min. is the usual option in an actual measurement.

The most critical variable in DO measurement is temperature. The oxygen partial pressure is varied and the electron activity rate of probes is increased and the membrane penetration rate is varied depending on temperature, and this leads to current variation which disturbs accuracy in measurement. Therefore, accurate temperature measurement is the most critical factor in precise DO measurement.

Additionally, there is sensitive relationship with the flow rate of measuring object. The object with a certain level of flow rate helps oxygen penetrate membrane in a high speed and the thin layer of object in front of membrane helps accurate transfer of oxygen. Furthermore, when the flow rate goes over a certain level, that is, when the thin layer of measuring object is over a certain thickness, it is not sensitive to the probe current. Generally, the flow rate is maintained at 2.5cm/sec ~ 5cm/sec. Maintaining a constant flow rate is very important in accurate DO measurement.

7.2 Probe care and Replacement

DO probe consists of probe body, temperature compensation sensor, cathodic probe, anodic probe, membrane, membrane fixing cap, and electrolyte.



① probe body, ② automatic temperature compensation sensor, ③ probe (cathodic, anodic), ④ cap (membrane)

Pay attention when handling the cap which protects and fixes membrane. Especially, when you touch membrane with a finger, it is vulnerable to be contaminated with fingerprint and this disturbs accurate measurement.

Membrane cap replacement

When membrane or electrolyte is contaminated or probes are not stabilized, the electrolyte and membrane shall be replaced. The procedures are as follows:

- ① Remove ② cap from probe by turning it carefully.
- ② Clean ③ probe part with distilled water and then dry it with tissues.
(If there is a bubble, eliminate it by touching it.)
- ④ Apply small amount electrolyte to probe and tighten the new cap carefully.
- ⑤ Clean probe in a clean water and dry membrane part with soft tissues.

Accessory

Default accessory

① 3m cable/probe 1ea, ② membrane cap 2ea, ③ electrolyte 20ml, ④ DC 9V battery

optional accessory : RS232C cable

Electrolyte and membrane cap are consumable. please contact Omega.

8 TROUBLESHOOTING

trouble	cause	solution
No display	Battery is not connected Out of battery No power (automatic power off after 20 min.)	Check if batter is properly connected Turn on the power switch
Error message	Probes are not connected to the unit Probe lifetime is over	Connect probes to the unit properly Replace probes
DO value on a display is unstable.	Probes are not under stable condition Membrane is damaged Electrolyte is contaminated Probe lifetime is over	Move the unit (probes) to stable place Replace membrane cap Replace probes
No screen change	HOLD key is under pressed condition	Press HOLD key
The battery display is flickering.	Indicate out of battery	Replace battery

If a problem persists even with troubleshooting, please contact your seller.

9 SPECIFICATIONS

Item	Specification
Dissolved Oxygen Range	0 to 19.99 mg/l
Resolution & Accuracy	0.01 mg/l & $\pm 1.5\%$ Full Scale
%Saturation of Oxygen	0.0 to 40.0 %
Resolution & Accuracy	0.1 % & $\pm 1.5\%$ Full Scale
Temperature Range	-10.0 to 45.0 °C
Resolution & Accuracy	0.1 °C & ± 0.3 °C
Salinity Correction	0.0 to 50.0 ppt
Barometric Pressure Correction	555 to 808 mmHg
Method	manual input for auto matic correction
No. of Calibration Points	Up to 2 points; 20.9% in air and/ or 0% in known solution
Memory	16 sets
Special Functions	Electrode characteristics; Hold & Auto-Power Off after 20 minutes RS232 Communication (option)
Power Requirements	DC 9V battery

10 APPENDIX

A. OXYGEN SOLUBILITY TABLE

Solubility of Oxygen in mg/l in Water Exposed to Water-Saturated Air at 760 mm Hg Pressure.

Salinity = Measure of quantity of dissolved salts in water.

Chlorinity = Measure of chloride content, by mass of water.

Salinity(‰) = 1.80655 x Chlorinity (‰)

Temp. °C	Chlorinity:0 Salinity:0	5.0ppt 9.0ppt	10.0ppt 18.1ppt	15.0ppt 27.1ppt	20.0ppt 36.1ppt	25.0ppt 45.2ppt
0.0	14.62	13.73	12.89	12.10	11.36	10.66
1.0	14.22	13.36	12.55	11.78	11.07	10.39
2.0	13.83	13.00	12.22	11.48	10.79	10.14
3.0	13.46	12.66	11.91	11.20	10.53	9.90
4.0	13.11	12.34	11.61	10.92	10.27	9.66
5.0	12.77	12.02	11.32	10.66	10.03	9.44
6.0	12.45	11.73	11.05	10.40	9.80	9.23
7.0	12.14	11.44	10.78	10.16	9.58	9.02
8.0	11.84	11.17	10.53	9.93	9.36	8.83
9.0	11.56	10.91	10.29	9.71	9.16	8.64
10.0	11.29	10.66	10.06	9.49	8.96	8.45
11.0	11.03	10.42	9.84	9.29	8.77	8.28
12.0	10.78	10.18	9.62	9.09	8.59	8.11
13.0	10.54	9.96	9.42	8.90	8.41	7.95
14.0	10.31	9.75	9.22	8.72	8.24	7.79
15.0	10.08	9.54	9.03	8.54	8.08	7.64
16.0	9.87	9.34	8.84	8.37	7.92	7.50
17.0	9.67	9.15	8.67	8.21	7.77	7.36
18.0	9.47	8.97	8.50	8.05	7.62	7.22
19.0	9.28	8.79	8.33	7.90	7.48	7.09

Temp. °C	Chlorinity:0 Salinity:0	5.0ppt 9.0ppt	10.0ppt 18.1ppt	15.0ppt 27.1ppt	20.0ppt 36.1ppt	25.0ppt 45.2ppt
20.0	9.09	8.62	8.17	7.75	7.35	6.96
21.0	8.92	8.46	8.02	7.61	7.21	6.84
22.0	8.74	8.30	7.87	7.47	7.09	6.72
23.0	8.58	8.14	7.73	7.34	6.96	6.61
24.0	8.42	7.99	7.59	7.21	6.84	6.50
25.0	8.26	7.85	7.46	7.08	6.72	6.39
26.0	8.11	7.71	7.33	6.96	6.62	6.28
27.0	7.97	7.58	7.20	6.85	6.51	6.18
28.0	7.83	7.44	7.08	6.73	6.40	6.09
29.0	7.69	7.32	6.96	6.62	6.30	5.99
30.0	7.56	7.19	6.85	6.51	6.20	5.90
31.0	7.43	7.07	6.73	6.41	6.10	5.81
32.0	7.31	6.96	6.62	6.31	6.01	5.72
33.0	7.18	6.84	6.52	6.21	5.91	5.63
34.0	7.07	6.73	6.42	6.11	5.82	5.55
35.0	6.95	6.62	6.31	6.02	5.73	5.46
36.0	6.84	6.52	6.22	5.93	5.65	5.38
37.0	6.73	6.42	6.12	5.84	5.56	5.31
38.0	6.62	6.32	6.03	5.75	5.48	5.23
39.0	6.52	6.22	5.98	5.66	5.40	5.15
40.0	6.41	6.12	5.84	5.58	5.32	5.08
41.0	6.31	6.03	5.75	5.49	5.24	5.01
42.0	6.21	5.93	5.67	5.41	5.17	4.93
43.0	6.12	5.84	5.58	5.33	5.09	4.86
44.0	6.02	5.75	5.50	5.25	5.02	4.79
45.0	5.93	5.67	5.41	5.17	4.94	4.72

B CALIBRATION VALUES TABLE

Calibration values for various atmospheric pressures and altitudes.

Note: This table is for your information only. It is not required for calibration.

Pressure mmHg	Pressure Inches Hg	Pressure kPa	Altitude in feet	Altitude in meters	Calibraton Value in %
768	30.23	102.3	-276	-84	101
760	29.92	101.3	0	0	100
752	29.61	100.3	278	85	99
745	29.33	99.3	558	170	98
737	29.02	98.3	841	256	97
730	28.74	97.3	1126	343	96
722	28.43	96.3	1413	431	95
714	28.11	95.2	1703	519	94
707	27.83	94.2	1995	608	93
699	27.52	93.2	2290	698	92
692	27.24	92.2	2587	789	91
684	26.93	91.2	2887	880	90
676	26.61	90.2	3190	972	89
669	26.34	89.2	3496	1066	88
661	26.02	88.2	3804	1160	87
654	25.75	87.1	4115	1254	86
646	25.43	86.1	4430	1350	85
638	25.12	85.1	4747	1447	84
631	24.84	84.1	5067	1544	83
623	24.53	83.1	5391	1643	82
616	24.25	82.1	5717	1743	81
608	23.94	81.1	6047	1843	80
600	23.62	80.0	6381	1945	79
593	23.35	79.0	6717	2047	78
585	23.03	78.0	7058	2151	77
578	22.76	77.0	7401	2256	76
570	22.44	76.0	7749	2362	75
562	22.13	75.0	8100	2469	74
555	21.85	74.0	8455	2577	73
547	21.54	73.0	8815	2687	72

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!

Shop online at omega.com

TEMPERATURE

- ☑ Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- ☑ Wire: Thermocouple, RTD & Thermistor
- ☑ Calibrators & Ice Point References
- ☑ Recorders, Controllers & Process Monitors
- ☑ Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- ☑ Transducers & Strain Gages
- ☑ Load Cells & Pressure Gages
- ☑ Displacement Transducers
- ☑ Instrumentation & Accessories

FLOW/LEVEL

- ☑ Rotameters, Gas Mass Flowmeters & Flow Computers
- ☑ Air Velocity Indicators
- ☑ Turbine/Paddlewheel Systems
- ☑ Totalizers & Batch Controllers

pH/CONDUCTIVITY

- ☑ pH Electrodes, Testers & Accessories
- ☑ Benchtop/Laboratory Meters
- ☑ Controllers, Calibrators, Simulators & Pumps
- ☑ Industrial pH & Conductivity Equipment

DATA ACQUISITION

- ☑ Data Acquisition & Engineering Software
- ☑ Communications-Based Acquisition Systems
- ☑ Plug-in Cards for Apple, IBM & Compatibles
- ☑ Datalogging Systems
- ☑ Recorders, Printers & Plotters

HEATERS

- ☑ Heating Cable
- ☑ Cartridge & Strip Heaters
- ☑ Immersion & Band Heaters
- ☑ Flexible Heaters
- ☑ Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- ☑ Metering & Control Instrumentation
- ☑ Refractometers
- ☑ Pumps & Tubing
- ☑ Air, Soil & Water Monitors
- ☑ Industrial Water & Wastewater Treatment
- ☑ pH, Conductivity & Dissolved Oxygen Instruments

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2007 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

