



345 Carlingview Drive
Toronto, Ontario
CANADA M9W 6N9
Tel.: 416.734.3300
Fax.: 416.231.1626
Toll Free: 1.877.682.8772
www.tssa.org

May 29, 2017

SCOTT ISLIP
ROUND ENGINEERING INC
10 SEGWUN RD
WATERDOWN ON L0R 2H8
CA

Service Request Type.: BPV-National AB
Service Request No.: 2051920
Your Reference No.: ROSEMOUNT R-0709A/B
Registered to.: EMERSON PROCESS MANAGEMENT, ROSEMOUNT ANALYTICAL INC

Dear SCOTT ISLIP,

Please find enclosed the original response from AB, registered under the CRN No.: 0F19160.52.

As all jurisdictional fees are handled by the Technical Standards and Safety Authority (TSSA), you do not pay any jurisdictions directly.

Should you have any questions or require further assistance, I will be happy to assist you.
For general enquiries, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. When contacting TSSA regarding this file, please refer to the Service Request number provided above.

Yours truly,

Joanna Karpinski

Tel: 416-734-3377
Fax: 416-231-6183
Email: jkarpinski@tssa.org

April 17, 2017

Attention: Tanya Francis
TECHNICAL STANDARDS & SAFETY AUTHORITY
345 CARLINGVIEW DRIVE
TORONTO, ON M9W 6N9

Email: tfrancis@tssa.org

The design submission, tracking number 2017-02049, originally received on April 04, 2017 was surveyed and accepted for registration as follows:

CRN : 0F19160.52

Accepted on: April 17, 2017

Reg Type: New Design

Expiry Date: February 10, 2027

Drawing No. : DESIGN REPORT #R-0709A & R-0709B

Fitting type: LOW FLOW CELL, FREE CHLORINE & DISSOL OXY. SENSOR

Design registered in the name of : EMERSON PROCESS MANAGEMENT

Description	MAWP	Design Temperature	MDMT
Low Flow Cell	621kPa	70 °C	0 °C
Chlorine & Oxygen Sensor	448kPa	50 °C	0 °C

The registration is conditional on your compliance with the following notes:

This registration is valid only for fittings fabricated at the location(s) covered by the QC certificate attached to the accepted AB-41 Statutory Declaration form.

This registration is valid only until the indicated expiry date and only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency until that date.

Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

Enclosed are stamped prints for your reference.

Sincerely,



STOJANOVIC, STEVAN, P. Eng.

**STATUTORY DECLARATION
Registration of Fittings**

I, DANA CROWLEY, MANAGER OF COMPLIANCE ENGINEERING
(name of applicant) (position title) (must be in a position of authority)
of EMERSON PROCESS MANAGEMENT ROSEMOUNT ANALYTICAL, INC.
(name of manufacturer)
located at 2400 BARRANCA PARKWAY, IRVINE, CA, 92606, USA
(plant address)

In this space, show facsimile of manufacturer's logo or trademark as it will appear on the fitting.



do solemnly declare that the fittings listed hereunder, which are subject to the Safety Codes Act (check one)

- ☒ comply with the requirements of ASME B31.1, B31.3 which specifies the dimensions,
(title of recognized North American Standard)
materials of construction, pressure/temperature ratings and identification marking of the fittings, or
☐ are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with _____ as supported by the attached _____
(title of code of construction or other applicable document)
data which identifies the dimensions, materials of construction, pressure/temperature ratings and the basis for such ratings, and the marking of the fittings for identification.

I further declare that the manufacture of these fittings is controlled by a quality control program which has been verified by the following authority, DNV-GL ISO 9001:2008 as being suitable for the manufacture of these fittings to the stated standard. The fittings covered by this declaration, for which I seek registration, are

CATEGORY F

(brief description of fittings)

In support of this application, the following information, calculations and/or test data are attached:

SCOPE OF CRN, DRAWINGS, CALCULATIONS, REPORTS, WORLDWIDE LOCATIONS APPENDIX

DECLARED before me at Irvine in the County of Orange of California
(city) (province or state)
this 5th day of January, 2017
(Month) (Year)

(print) Cathrine Ann Stip
(a Commissioner of Oaths or Notary Public)

(sign) Cathrine Ann Stip
(a Commissioner of Oaths or Notary Public)

Dana Crowley
(signature of applicant)

For ABSA Office Use Only:

NOTES: _____

To the best of my knowledge and belief, the application meets the requirements of the Safety Codes Act and CSA Standard B51, Clause 4.2, and is accepted for registration in Category F

Registration Number: OF 19160-52

STEVAN STOJANOVIC
(Signature of the Administrator/SCO)

Date Registered: APR 17 2017

Expiry Date: Feb. 10, 2024

The information you provide is necessary only for the administration of the programs as required by the Alberta Safety Codes Act and Regulations in the Pressure Equipment Discipline.



ROSEMOUNT**EMERSON**
Process Management

EMERSON PROCESS MANAGEMENT ROSEMOUNT ANALYTICAL, INC.

2400 BARRANCA PARKWAY

IRVINE, CA

USA, 92606

27-Jan-17

SCOPE OF CRN REGISTRATION

Item No. 1

PRODUCT DESCRIPTION		PRESSURE - TEMPERATURE RATINGS	
Description:	Low Flow Cell 24091-00, 24091-01, 24091-02	MAWP AT 158F:	90 psig
Design Standard:	ASME B31.3.	MDMT:	32F
End Connections:	Process: 1/4" FNPT, Sensor: 3/4" FNPT, 1" FNPT	NOTES:	None
Drawings:	24091-00, 24091-2, 24091-02		
CRN Report:	R-0709A		
MATERIALS OF CONSTRUCTION			
Sensor Material:	Polycarbonate, Polyester, Silicone		
Notes:	None		

Item No. 2

PRODUCT DESCRIPTION		PRESSURE - TEMPERATURE RATINGS	
Description:	Free Chlorine Sensor 499ACL Dissolved Oxygen Sensor 499ADO	MAWP AT 122F:	65 psig
Design Standard:	ASME B31.3.	MDMT:	32F
End Connections:	Sensor: 1" MNPT	NOTES:	None
Drawings:	499A-VP, 499A, 499ACL-03		
CRN Report:	R-0709B		
MATERIALS OF CONSTRUCTION			
Sensor Material:	Noryl, Viton, Silicone, Platinum, Polyethersulphone		
Notes:	None		

Note 1) See attached list of Manufacturing Locations applicable to this CRN.

ABSA	
SAFETY CODES ACT - PROVINCE OF ALBERTA	
REGISTRATION OF FITTINGS	
REGISTRATION NO.	10F19160-52
DWG. NO. or CAT. NO.	Design Report #R-0709A & R-0709B
TYPE OF FITTINGS	Low Flow Cell, Free Chlorine & Diss Oxy Sensor
APR 17 2017	INITIALS <i>JS</i>
Date	STEVAN STOJANOVIC, P.Eng. DESIGN SURVEY ENGINEER

ROSEMOUNT®



EMERSON

Process Management

WORLDWIDE LOCATIONS APPENDIX

ROSEMOUNT MANUFACTURING LOCATIONS & CERTIFYING AUTHORITIES

(rev. January 04, 2017)

Rosemount, Inc.

6021 Innovation Boulevard
Shakopee, MN
55379, USA

ISO 9001:2008 Certified by DNV GL

Rosemount, Inc.

8200 Market Boulevard
Chanhassen, MN
55317, USA

ISO 9001:2008 Certified by DNV GL

Rosemount, Inc.

12001 Technology Drive
Eden Prairie, MN
55344, USA

ISO 9001:2008 Certified by DNV GL

Emerson Process Management Rosemount Analytical, Inc.

2400 Barranca Parkway
Irvine, CA
92606, USA

ISO 9001:2008 Certified by DNV GL

Emerson Process Management Rosemount Analytical, Inc.

Circuito Del Progreso #27, Parque Industrial Progreso,
21190, Mexicali, MX,
Mexico

ISO 9001:2008 Certified by DNV GL

LOW FLOW CELLS

Emerson offers a variety of low flow cells for sidestream applications where it is impractical to divert a large volume of sample, particularly if the sample must be sent to waste. Choose a transparent plastic or stainless steel body—both have ¼ inch FPT process connections. Plastic flow cells PN 24091-00, -01, and -02 are also supplied with ¼ inch MPT to ¼ inch OD tubing fittings

and have a union connection that allows easy removal of the sensor.

Valved rotameters are also available (see page 41) to adjust and measure sample flow in sidestream installations. Accurate control of flow is especially important when measuring dissolved oxygen, chlorine, and ozone.

Low Flow Cells	PN 24091-00	PN 24091-01	PN 24091-02	S10240 (SQ 7716)	S10290 (SQ 7637)
Process Connection	1/4 inch 316 SST male tube connector				
Wetted Materials	Body and Nut - Polycarbonate/polyester blend; 1/4" Fittings - 316 SST; O-ring - Silicone			316 SST	
Maximum Temperature	158°F (70°C)			Consult Factory	
Maximum Pressure	90 psig (621 kPa)			Consult Factory	
Sensor Threaded Connection	1 inch	1 inch	3/4 inch	1 inch	3/4 inch
Special features	None	Bubble shedding nozzle	None	Order as a special request only	
Compatible Sensor Models*					
pH and ORP Sensors	396P, 389, 3500, 3900	-	RB-546	396P, 389, 3500, 3900	-
Conductivity Sensors	-	-	400, 400 VP	-	400, 400 VP
Dissolved Oxygen	499ATrDO, 499ADO	499ADO	-	499A DO	-
Ozone	499AOZ	-	-	-	-
Chlorine	499ACL	498CL, 499ACL	-	-	-

*Note: All sensor models noted in this graph are listed with integral cables. The sensor models with the "VP" designation can also be used.

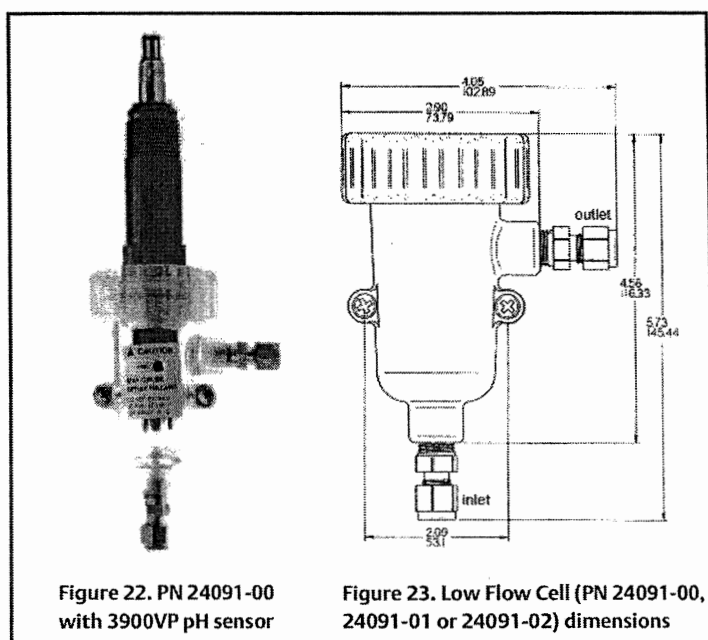


Figure 22. PN 24091-00 with 3900VP pH sensor

Figure 23. Low Flow Cell (PN 24091-00, 24091-01 or 24091-02) dimensions

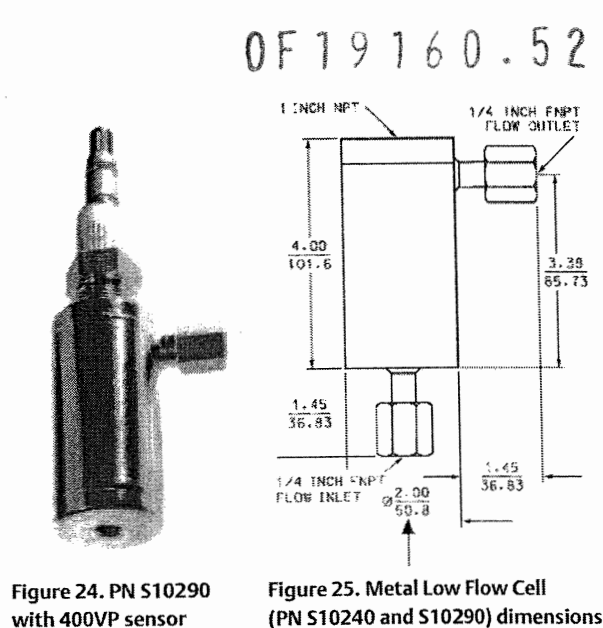


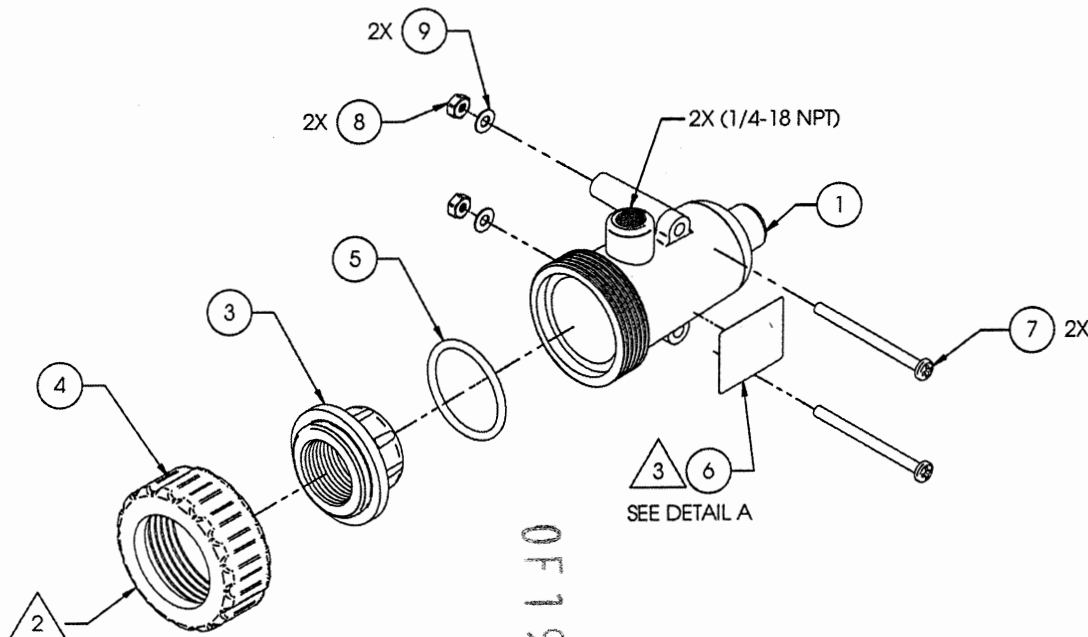
Figure 24. PN S10290 with 400VP sensor

Figure 25. Metal Low Flow Cell (PN S10240 and S10290) dimensions

This document contains information proprietary to Rosemount Analytical, and is not to be made available to those who may compete with Rosemount Analytical.

RELEASE DATE	ECO NO	REV
4/21/04	8739	A

REVISION				
LTR	ECO	DESCRIPTION	BY	DATE
B	LQD10166	SEE ECO	CH	7-7-10
				CHECKED/APPROVED
				JP/BMC



4. PLACE ASSEMBLED LOW FLOW CELL INSIDE PLASTIC BAG (ITEM 11) AND STAPLE CLOSED

3. ORIENTATION OF CAUTION LABEL (ITEM 6) TO BE 90° FROM CENTERLINE OF 1/4-18 NPT IN AREA SHOWN.

2. PLACE 2 CONNECTORS (ITEM 2) INSIDE PLASTIC BAG (ITEM 10) AND STAPLE CLOSED. THEN PLACE BAG INSIDE SUBASSEMBLY. PLACE TAPE (ITEM 13) COMPLETELY ACROSS NUT (ITEM 4) AND FOLD OVER THE SIDES.

AFTER INSTALLING ADAPTER (ITEM 3) AND O-RING (ITEM 5) HAND-TIGHTEN NUT (ITEM 4).

NOTES: UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
REMOVE BURRS & SHARP EDGES
MACHINE FILLET RADII .020 MAX
NOMINAL SURFACE FINISH: 125
ANGLES $\pm 1/2^\circ$
.XX $\pm .03$.XXX $\pm .010$

MATERIAL

FINISH

APPROVALS		DATE
DRAWN	B. JOHNSON	3-12-04
CHECKED	J. PERKINS	4-12-04
ENG APVD	B. COVEY	4-19-04

THIS FILE CREATED USING
SOLID EDGE



DETAIL A
ORIENTATION VIEW

B1

Emerson ROSEMOUNT	
PROCESS MANAGEMENT ANALYTICAL	
TITLE	
S ASSY, LOW FLOW CELL, 1" NPT ADAPTER	
SIZE	DWG NO
B	24091-00
SCALE: 1:2	WEIGHT:
SHEET 1 OF 1	

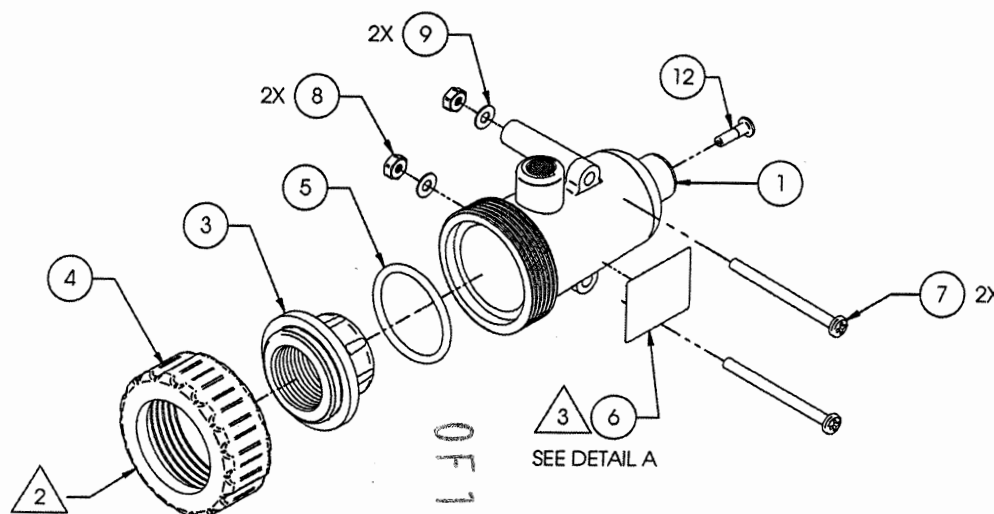
B
24091-00

This document contains information proprietary to Rosemount Analytical, and is not to be made available to those who may compete with Rosemount Analytical.

RELEASE DATE	ECO NO	REV
4/21/04	8739	A

REVISION				
LTR	ECO	DESCRIPTION	BY	DATE
B	LQD10166	SEE ECO	CH	7-7-10
			CHECKED/APPROVED	
			JP/BMC	

B
24091-01



DETAIL A
ORIENTATION VIEW

B1

4. PLACE ASSEMBLED LOW FLOW CELL INSIDE PLASTIC BAG (ITEM 11) AND STAPLE CLOSED

3. ORIENTATION OF CAUTION LABEL (ITEM 6) TO BE 90° FROM CENTERLINE OF 1/4-18 NPT IN AREA SHOWN.

2. PLACE 2 CONNECTORS (ITEM 2) INSIDE PLASTIC BAG (ITEM 10) AND STAPLE CLOSED. THEN PLACE BAG INSIDE SUBASSEMBLY. PLACE TAPE (ITEM 13) COMPLETELY ACROSS NUT (ITEM 4) AND FOLD OVER THE SIDES.

1. AFTER INSTALLING ADAPTER (ITEM 3) AND O-RING (ITEM 5) HAND-TIGHTEN NUT (ITEM 4).

NOTES UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES REMOVE BURRS & SHARP EDGES MACHINE FILLET RADII .020 MAX NOMINAL SURFACE FINISH: 125 ANGLES $\pm 1/2^\circ$.XX $\pm .03$.XXX $\pm .010$	
MATERIAL	
FINISH	

APPROVALS		DATE
DRAWN	B. JOHNSON	3-12-04
CHECKED	J. PERKINS	4-12-04
ENG APVD	B. COVEY	4-19-04
THIS FILE CREATED USING SOLID EDGE		

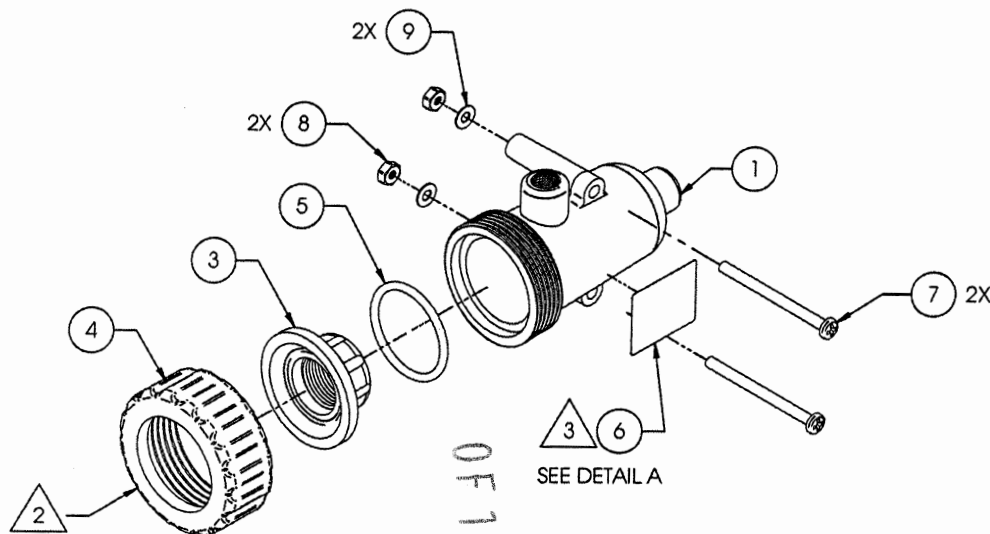
Emerson PROCESS MANAGEMENT		ROSEMOUNT ANALYTICAL	
TITLE			
S ASSY, LOW FLOW CELL, 1" NPT ADAPTER W/ NOZZLE			
SIZE	DWG NO		REV
B	24091-01		B
SCALE: 1:2		WEIGHT:	SHEET 1 OF 1

This document contains information proprietary to Rosemount Analytical, and is not to be made available to those who may compete with Rosemount Analytical.

RELEASE DATE	ECO NO	REV
4/21/04	8739	A

REVISION				
LTR	ECO	DESCRIPTION	BY	DATE
B	LQD10166	SEE ECO	CH	7-7-10
			CHECKED/APPROVED	
			JP/BMC	

B
24091-02



DETAIL A
ORIENTATION VIEW (B1)

4. PLACE ASSEMBLED LOW FLOW CELL INSIDE PLASTIC BAG (ITEM 11) AND STAPLE CLOSED
3. ORIENTATION OF CAUTION LABEL (ITEM 6) TO BE 90° FROM CENTERLINE OF 1/4-18 NPT IN AREA SHOWN.
2. PLACE 2 CONNECTORS (ITEM 2) INSIDE PLASTIC BAG (ITEM 10) AND STAPLE CLOSED. THEN PLACE BAG INSIDE SUBASSEMBLY. PLACE TAPE (ITEM 13) COMPLETELY ACROSS NUT (ITEM 4) AND FOLD OVER THE SIDES.
1. AFTER INSTALLING ADAPTER (ITEM 3) AND O-RING (ITEM 5) HAND-TIGHTEN NUT (ITEM 4).

NOTES. UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
REMOVE BURRS & SHARP EDGES
MACHINE FILLET RADII .020 MAX
NOMINAL SURFACE FINISH: 125
ANGLES ± 1/2°
.XX ± .03 .XXX ± .010

MATERIAL
FINISH

APPROVALS		DATE
DRAWN	B. JOHNSON	3-12-04
CHECKED	J. PERKINS	4-12-04
ENG APVD	B. COVEY	4-19-04
THIS FILE CREATED USING SOLID EDGE		

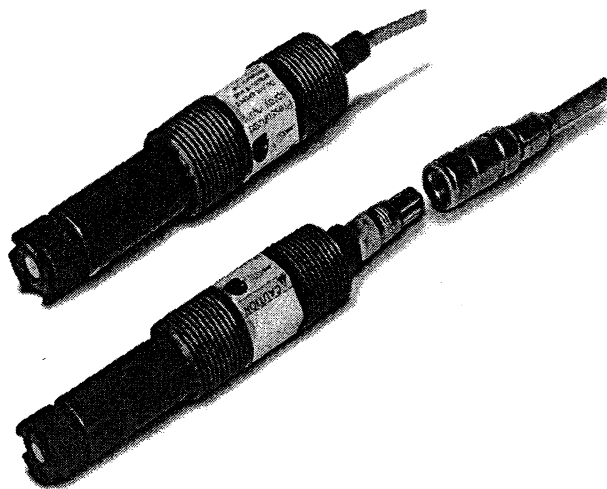
Emerson ROSEMOUNT	
PROCESS MANAGEMENT ANALYTICAL	
TITLE	
S ASSY, LOW FLOW CELL, 3/4" NPT ADAPTER	
SIZE	REV
B	B
DWG NO	
24091-02	
SCALE: 1:2	WEIGHT:
SHEET 1 OF 1	

499 ACL-01

Free Chlorine Sensor

The 499ACL-01 sensor is intended for the continuous determination of free chlorine (hypochlorous acid plus hypochlorite ion) in water.

- Measure free chlorine without sample pretreatment. No messy and expensive reagents needed.
- Automatic correction to at least pH 9.5.
- Easily replaceable membrane; no special tools required.
- Automatic compensation for changes in membrane permeability with temperature.
- Automatic pressure equalization maintains correct membrane tension.
- Variopol connector option allows the sensor to be replaced without running new cable.



0F19160.52

Features and Applications

The primary application is measuring chlorine in drinking water. The sensor requires no acid pretreatment and can measure free chlorine in samples having pH as high as 9.5. In some cases, samples having pH as great as 10.0 can be measured. For high pH applications, consult the factory. The linear range of the sensor is 0 to 10 ppm. For determination of higher levels of chlorine, consult the factory.

The 499ACL-01 is a membrane-covered amperometric sensor. The sensor consists of a hydrophilic membrane stretched tightly over a platinum cathode. A silver anode and an electrolyte solution complete the internal circuit. During operation, chlorine diffuses from the sample through the membrane. A polarizing voltage applied to the cathode completely reduces chlorine to chloride. The reduction produces a current, which the analyzer measures. The current is directly proportional to the rate at which chlorine diffuses through the membrane, which is ultimately proportional to the concentration of chlorine in the sample.

The 499ACL-01 sensor needs no pretreatment. Instead, the analyzer automatically applies a pH correction factor to the chlorine reading. If the sample pH varies more than 0.2 pH (peak-to-peak), an auxiliary pH sensor is required to provide the continuous pH correction.

Because the rate of diffusion of free chlorine through the membrane depends on temperature, sensor response must be corrected for temperature changes. A Pt 100 RTD in the sensor measures the temperature, and the analyzer automatically performs the correction.

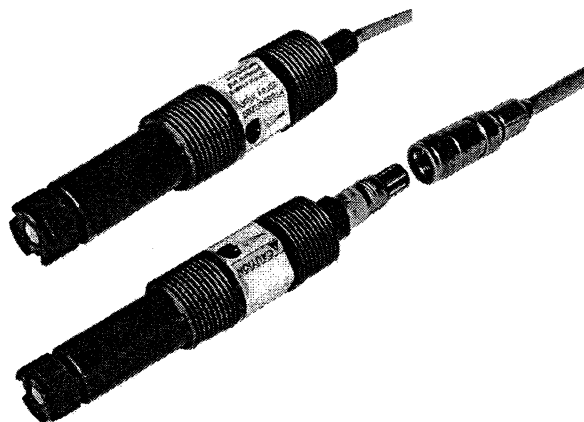
Stable, dilute chlorine standards do not exist, so the sensor must be calibrated against the results of a laboratory test run on a grab sample of the process liquid. Portable test kits are available from other manufacturers.

All amperometric free chlorine sensors respond to changes in pH. Although free chlorine is a mixture of hypochlorous acid and

499ADO

Dissolved Oxygen Sensor

- Installs in aeration basins or sidestream samples.
- Rugged construction.
- Easily replaceable membrane; no special tools required.
- Automatic compensation for changes in membrane permeability with temperature.
- Automatic pressure equalization maintains correct membrane tension.
- Variopol connector option allows the sensor to be replaced without running new cable.



Features and Applications

The 499ADO sensor is intended for the continuous determination of dissolved oxygen between 0-20 ppm. The primary application is aeration basins in municipal and industrial wastewater treatment plants.

The 499ADO is a membrane-covered amperometric sensor. The sensor consists of a gas-permeable membrane stretched tightly over a gold cathode. A silver anode and an electrolyte solution complete the internal circuit. During operation, oxygen diffuses from the sample through the membrane to the cathode. A polarizing voltage applied to the cathode reduces the oxygen to hydroxide. The reaction produces a current, which the analyzer measures. The current is directly proportional to the rate at which oxygen reaches the cathode, which is ultimately proportional to the concentration of oxygen in the sample.

Because the rate of diffusion of oxygen through the membrane depends on temperature, sensor response must be corrected for temperature changes. A Pt 100 RTD in the sensor measures the temperature, and the analyzer automatically performs the correction.

Calibration is easy. Simply expose the sensor to water-saturated air and press a button on the analyzer. The analyzer measures the barometric pressure and calculates the equilibrium solubility of atmospheric oxygen at the prevailing temperature and pressure. (5081-A, and 1066 analyzers require the user to manually enter the barometric pressure.)

Maintenance is fast and easy. Replacing the membrane requires no special tools or fixtures. Simply place a few drops of electrolyte solution in the membrane assembly, place it on the cathode, and screw the retainer in place. To replenish the electrolyte solution, unscrew the fill plug, add the reagent from a squeeze bottle, and replace the plug.

Pressure changes have little influence on sensor response. A flexible bladder in the sensor prevents distortion of the membrane by keeping the pressure inside the sensor equal to the sample pressure.

Several mounting configurations are possible. For aeration basins and tanks, use the handrail mounting. For measuring oxygen in pipes, use a sidestream sample and install the sensor in either the flow tee or the low flow cell.