
Instruction Manual

Model D072
Optical Dissolved Oxygen Sensor



Safety and Modification Precautions

- In order to protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions describe in this instruction manual. We assume no liability for safety if users fail to observe these instructions when operating the product.
- If this instrument is used in a manner not specified in this Instruction manual, the protection provided by this instrument may be impaired.
- If any protection or safety circuit is required for the system controlled by the product or for the product itself, prepare it separately.
- Be sure to use the spare parts approved by Yokogawa Process Analyzers Europe B.V. (hereafter simply referred to as YOKOGAWA) when replacing parts or consumables.
- Modification of the product is strictly prohibited.
- The following safety symbols are used on the product as well as in this manual.



WARNING

This symbol indicates that an operator must follow the instructions laid out in this manual in order to avoid the risks, for the human body, of injury, electric shock, or fatalities. The manual describes what special care the operator must take to avoid such risks.



CAUTION

This symbol indicates that the operator must refer to the instructions in this manual in order to prevent the instrument (hardware) or software from being damaged, or a system failure from occurring.

CAUTION

This symbol gives information essential for understanding the operations and functions.

NOTE

This symbol indicates information that complements the present topic.

Notes on Handling Instruction manuals

- Please hand over the Instruction manuals to your end users so that they can keep the Instruction manuals on hand for convenient reference.
- Please read the information thoroughly before using the product.
- The purpose of these Instruction manuals is not to warrant that the product is well suited to any particular purpose but rather to describe the functional details of the product.
- No part of the Instruction manuals may be transferred or reproduced without prior written consent from YOKOGAWA.
- YOKOGAWA reserves the right to make improvements in the Instruction manuals and product at any time, without notice or obligation.
- If you have any questions, or you find mistakes or omissions in the Instruction manuals, please contact our sales representative or your local distributor.

Product Disposal:

The instrument should be disposed of in accordance with local and national legislation/regulations.

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1. PREFACE

1.1 Introduction

The DO72 optical dissolved oxygen sensor uses the optical measurement method to continuously measure oxygen dissolved in water in various industries and applications where accurate measurement and control is required.

The optical sensor is integrated in a exchangeable stainless-steel cap that is screwed to the probe housing. These extremely robust probes can be installed in various applications. The optical sensors have a fast response time & good long-term stability with low maintenance and low costs of ownership.

The DO72 sensor is available for ppm range and ultra trace ppb range oxygen measurements. The interface used is Bi-directional digital communication RS485 and can be connected directly to the new FLXA402 4-Wire converter. Converter is designed to combine the superior functionality and ease of use from the Yokogawa FLXA series with the digitization of the future.

The DO72 sensor is ideally suited for industry applications where it must stand harsh measurement conditions. They are delivered in 120mm length and have a sensor cap that can easily be exchanged.

1.2 Unpacking and Checking

Upon arrival of the purchased product, carefully unpack it and make sure the product has not been damaged during transportation. Verify the model code on a name label adhered on the packaging box. For details of the model code, see subsection 7.

1.3 Warranty and Service

Yokogawa products and parts are guaranteed free from defects in workmanship and material under normal use and service for a period of (typically) 12 months from the date of shipment from the manufacturer. Individual sales organizations can deviate from the typical warranty period, and the conditions of sale relating to the original purchase order should be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion, or by the effects of chemical processes are excluded from this warranty coverage. In the event of warranty claim, the defective goods should be sent (freight paid) to the Service Department of the relevant sales Organization for repair or replacement (at Yokogawa's discretion).

The following information must be included in the letter accompanying the returned goods:

- Model Code and Serial Number.
- Original Purchase Order and Date.
- Length of time in service and description of the process.
- Description of the fault and circumstances of the failure.
- Process/environmental conditions that may be related to the failure of the sensor
- Statement as to whether warranty or non-warranty service is requested.
- Complete shipping and billing instructions for return of material, plus the name and phone number of a contact person that can be reached for further information.
- Clean Statement

Returned goods that have been in contact with process fluids must be decontaminated and disinfected prior to shipment. Goods should carry a certificate to this effect, for the health and safety of our employees. Material Safety Data sheets must be included for all components of the process to which the sensor(options) have been exposed.

1.4 Serial number

The Serial number is defined by nine (9) alphanumeric characters:

X_1X_2 Production location
 X_3X_4 Year/Month code
 $X_5X_6X_7X_8X_9$ Tracking number

Example: N3X380005

Table 1: Production Year code

Year	Year code	Year	Year code
2014	P	2026	3
2015	R	2027	4
2016	S	2028	5
2017	T	2029	6
2018	U	2030	7
2019	V	2031	8
2020	W	2032	9
2021	X	2033	A
2022	Y	2034	B
2023	Z	2035	C
2024	1	2036	D
2025	2	2037	E

Table 2: Production Month code

Month	Month code
January	1
February	2
March	3
April	4
May	5
June	6
July	7
August	8
September	9
October	A
November	B
December	C

2. GENERAL SPECIFICATIONS

2.1 Measuring elements:

Optical dissolved oxygen sensor in probe body and an oxygen exchange cap (OEC).

2.2 Electrical specifications

Output signal:	Bi-directional digital communication
Physical layer:	RS485
Protocol:	MODBUS, RTU mode
Data rate:	Default 19200 b/s (8, No Parity, 2 stop bits)
Power supply:	+7 ... +30 VDC Max. 1W in active mode < 150mW in stand-by mode
Cable:	WU10 with one side wired pins and the other side VarioPin connector

2.3 Mechanical specifications

Case/OEC:	Stainless Steel (1.4435), Ra<0.4µm)
OEC sealings / material:	O-ring EPDM
OEC sealing dimensions mm (inch):	ID 9x1 (0.35x0.03)
Shaft sealing mm (inch):	ID 11x3 (0.43x0.11)
Housing size (LxDiam.):	120x12 mm (4.17x0.47)
Weight:	Min. 100g (0.22 lbs)
Sensor mounting system:	Sensor PG13.5 thread
Sensor connection:	VarioPin, 8 pins

2.4 Performance

DO72-W Wide measuring range sensor characteristics

Measuring range:	0 – 22.5 mg/L O ₂
Accuracy:	± 0.05 mg/L or 1% of reading whichever greater
Repeatability	± 0.05 mg/L or 1% of reading whichever greater
Temperature accuracy:	≤ 1.0°C (≤ 1.8°F) ¹

DO72-T Trace measuring range sensor characteristics

Measuring range:	0 - 2 mg/L O ₂
Accuracy:	± 3 ppb or 3% of reading whichever greater
Repeatability	± 3 ppb or 3% of reading whichever greater
Temperature accuracy:	≤ 1.0°C (≤ 1.8°F) ¹

Common characteristics

Operating temperature:	0 °C to + 50 °C (0 to 122°F)
Pressure:	0 to 12 Barg (0 to 174 psi) (overpressure); 0 to 0.990 Barg (0 to 14.36 psi) (under pressure)
Flow rate	2 m/sec or less ²
Response time t90	≤ 90 sec. ³
Ingress protection	IP X8 according EN 60529:1991/A1:2000/A2:2013 O-ring of OEC must be replaced once a year

2.5 Shipping details

Package size (LxWxH)	Approx. 300x100x75 mm (11.8x3.9x3.0 inch)	
Package weight (max.)		
Sensor	Sensor weight g (lbs)	Total package weight g (lbs)
DO72-W/-T	108 (0.23) g (lbs)	272 (0.59)g (lbs)
OEC CA/CB/CC	6 (0.01) g (lbs)	147 (0.32) g (lbs)

2.6 Environmental conditions

Storage temperature	-10 to +70°C (-14 to 158°F) ⁴
Ingress protection	IP X8 according EN 60529:1991/A1:2000/A2:2013 O-ring of OEC must be replaced once a year
Installation	Overvoltage Category I Pollution Degree 2 Altitude 2000 m or less (6561.68 feet)
(at 20°C (68°F), 960-980 hPa (13.92 to 14.21 psi), humidified gas mixtures, after performing a calibration)	

Note 1: Temperature measurement for process compensation only

Note 2: Hi flow rate can influence sensor performance

Note 3: From air saturated water to 0 g/L water (e.g. prepared by 1% sodium sulfite solution)

Note 4: Storage stability of the oxygen exchange cap is 5 years if stored under dark and dry conditions at 20°C (68°F)

2.7 Regulatory compliance

CE

CE/Directive:

768/2008/EC

CE-mark has been affixed on the product in 2021 for the First time

UKCA

UKCA-mark has been affixed on the product in 2021 for the first time.

EMC

Directive:

2014/30/EU

Standards:

EN 61326-1:2013; IEC 61326-1:2012
Table 2 (for use in industrial locations)
EN 55011:2016/A1:2017; CISPR11: 2015/
A1:2016

Group 1, Class B (for use in domestic establishments)

Approvals

ACMA

China

GB30439

LVD

Directive:

2014/35/EU

Standards:

NEN-EN-IEC 61010-1:2010/A1:2019;
NEN-EN-IEC 61010-2-030:2010/C1:2011

RoHS2

Directive:

2015/863/EU

Commission Delegated Directive (EU) 2015/863 amending Annex II as regards the list of restricted substances, and by applying Annex IV as regards the application of sensors, detectors, and electrodes, by applying the following standards:

EN-IEC 63000: 2018: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Label information:

All statutory required label information as well as model name, model code and serial number are printed on sensor body using laser technique as shown in example below.



3. INSTALLATION OF DO72

Using sensor adapters the DO72 optical dissolved oxygen sensor can be assembled into any Yokogawa flow or immersion/floating fitting, like: FF20, FF40 flow fitting, the PB350G angled floating ball holder, PB360G vertical floating ball holder, or DOX8HS submersion type holder. Fitting assembly assures sensor to be submerged to the optimum point to obtain precise measurements.

The DO72 can be also mounted to process and existing fitting product line using standard adapters.

3.1 Installation in sensor holder

An adaptor (optional Fig. 4) is necessary to assemble DO72 into the DOX8HS submersion type holder (see Fig. 1), PB350G angled floating ball holder (see Fig. 2), or PB360G vertical floating ball holder (see Fig. 3).

For mounting the sensor into the FF20 and FF40 flow fitting use sensor adapter as described in figure 5,6 and 7.

3.1 Preparing the sensor for use

Make sure that the Oxygen Exchange Cap (OEC) is screwed tightly to the probe body and did not work loose while handling the probe.

3.2 Mounting the sensor

Choose a holder / fitting that suits the liquid to be measured and the measurement location.

Note: Avoid choosing a location where the solution is unevenly distributed, since heavy hunting may result in the measured value. Also, avoid locations where bubbles occur frequently. Note that, if a measured solution running at a high flow rate contains particles of sand, the permeable membrane of the sensor may be damaged.

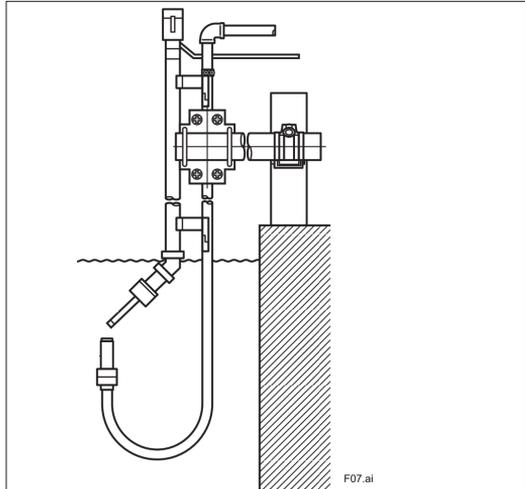


Fig. 1: DOX8HS submersion type holder

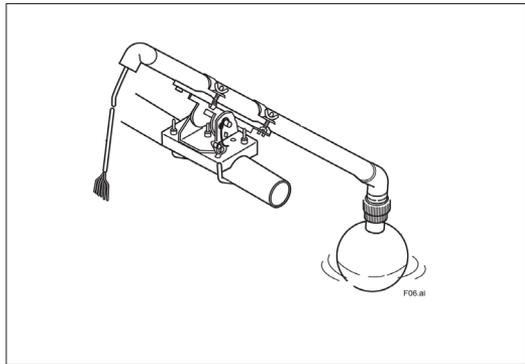


Fig. 2: PB350G/PB30 angled floating ball holder

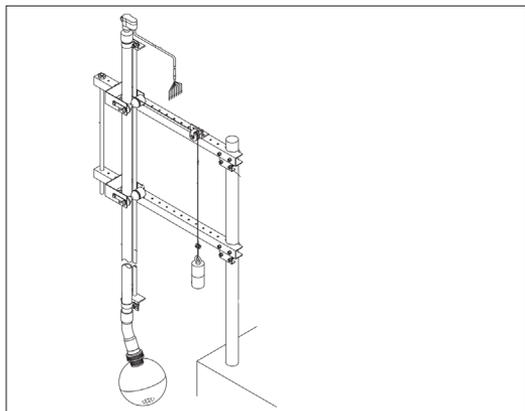


Fig. 3: PB360G vertical floating ball holder

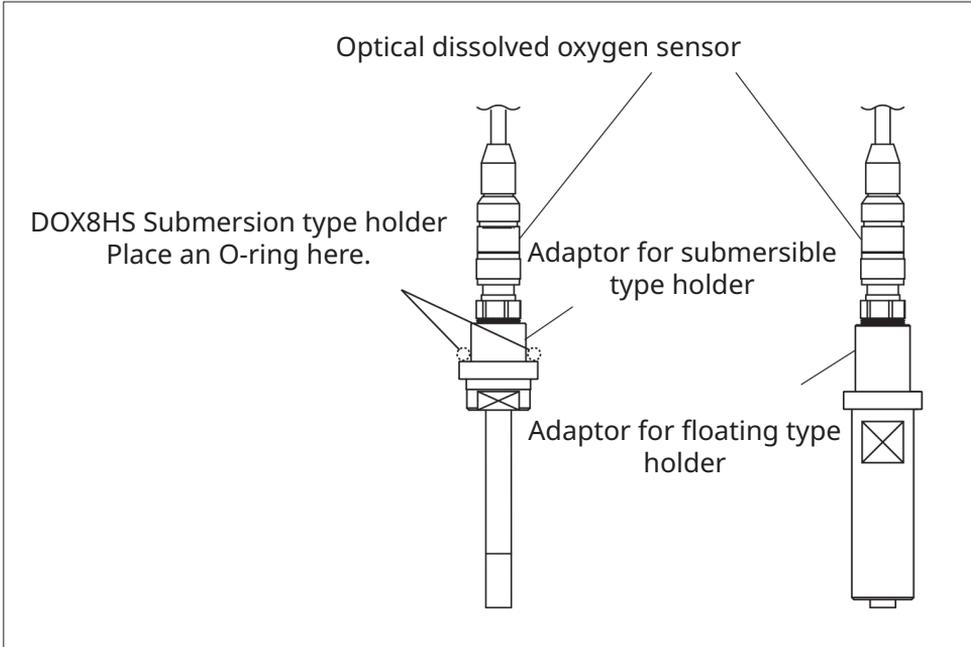


Fig. 4: Adapter for installing DO72 into submersible and floating ball holder

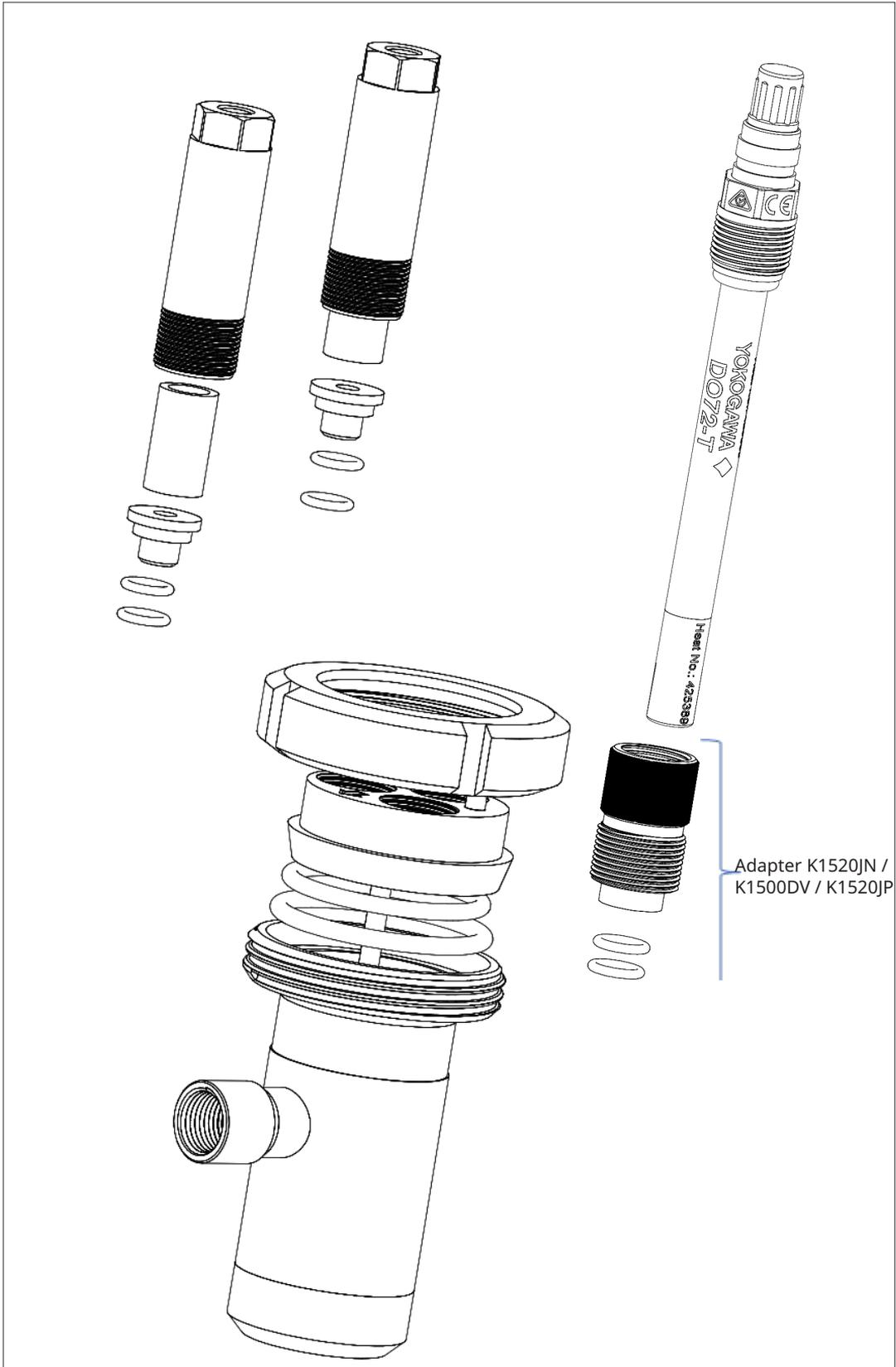


Figure 5. DO72 installation in Yokogawa FF20 fitting⁶ using the adapter K1520JN, K1500DV or K1520JP
IM12J06J02-00EN-P

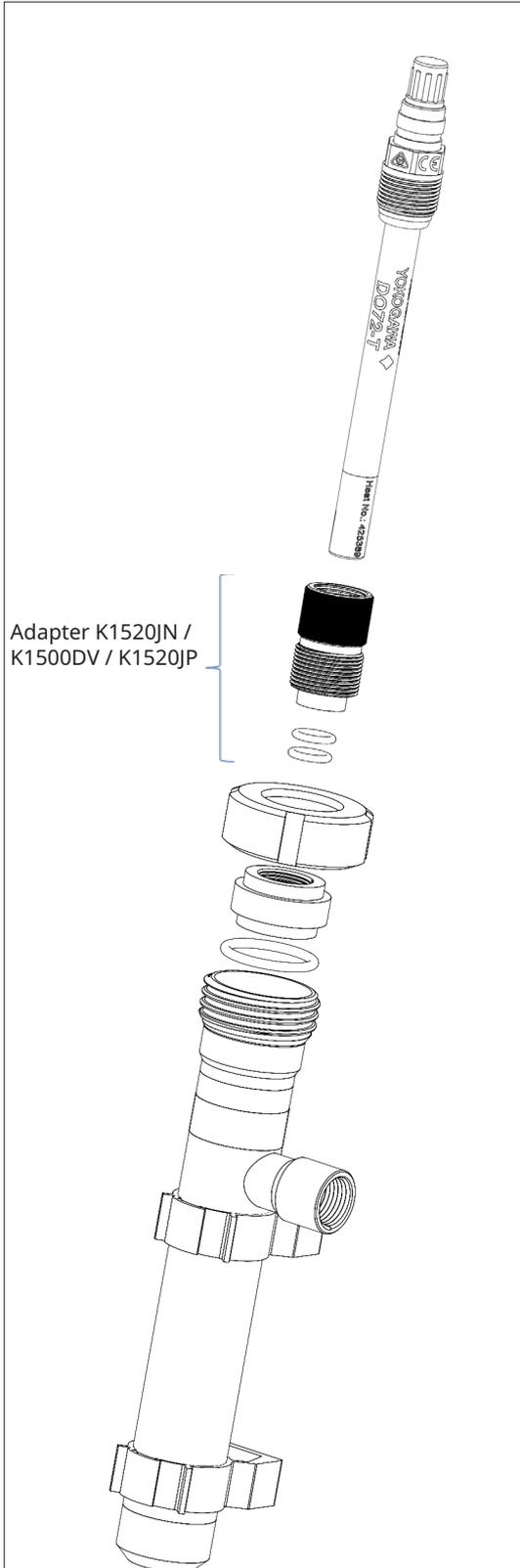


Figure 6. DO72 installation in FF40/
FS40 fitting⁶ using the adapter K1520JN,
K1500DV or K1520JP

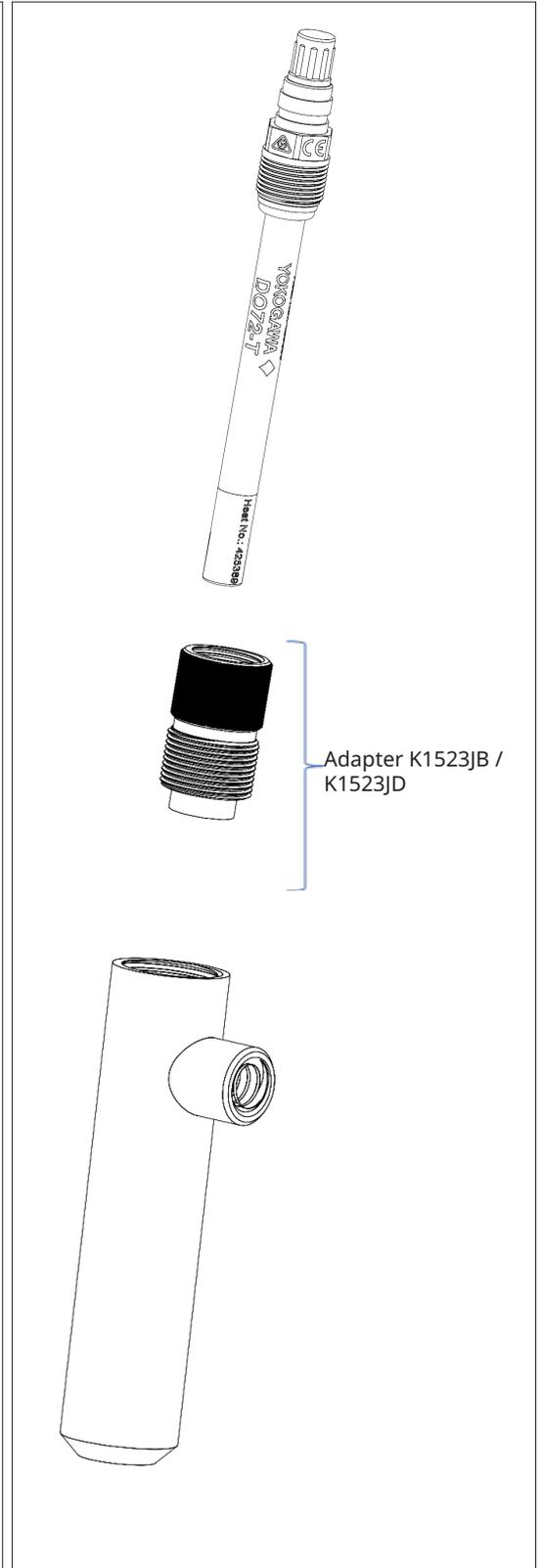


Figure 7. DO72 Installation in SC4A SS
flow fitting⁶ using the adapter K1523JB,
K1523JD

4. DIMENSIONS

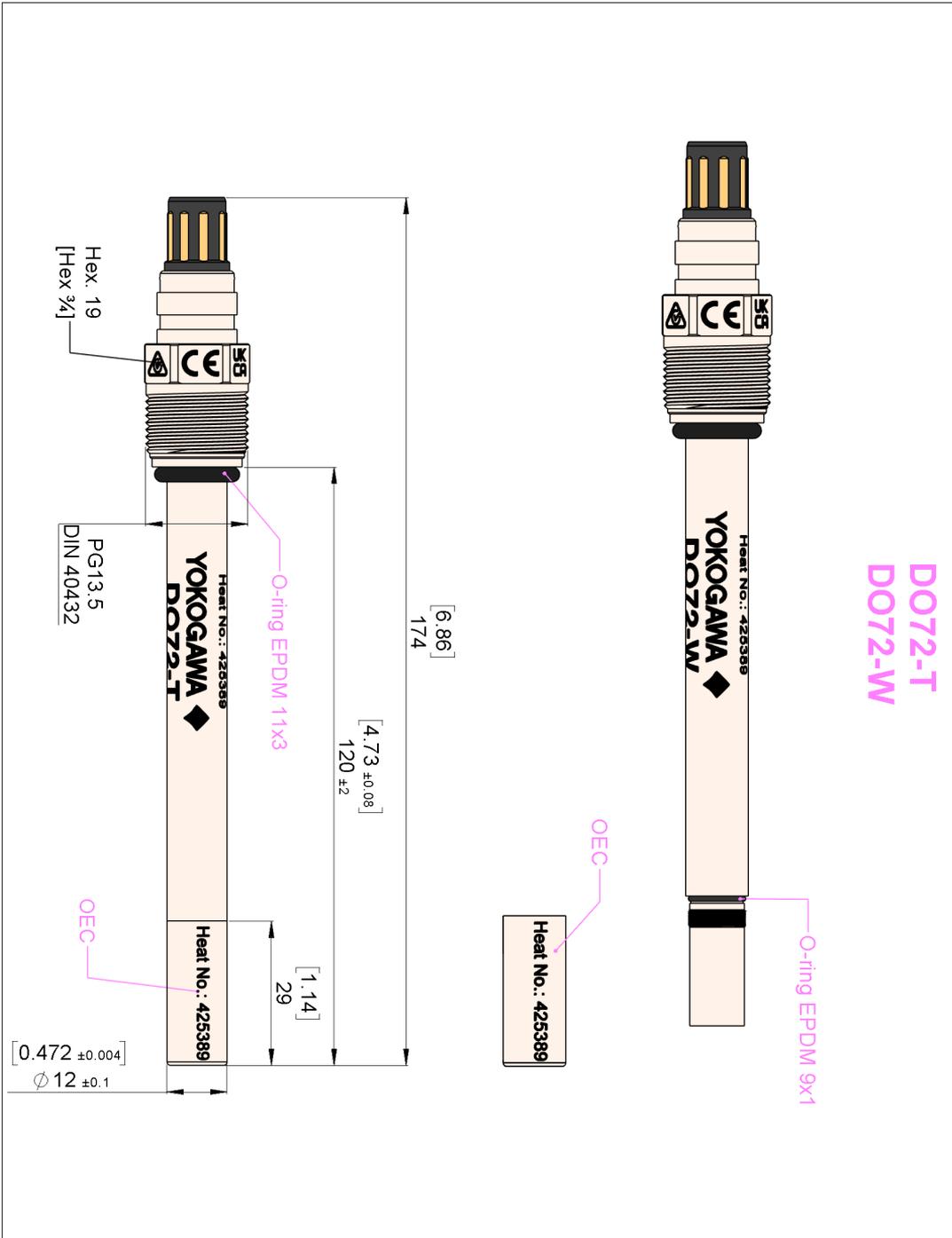


Fig. 8. Dimensions DO72 in mm

5. WIRING

DO72 Sensor cable connection to converter is delivered with wire pin end. For information on DO72 sensor cable connection to FLXA402, refer to the user’s manual for FLXA402 4-Wire Converter (IM12A01F01-02EN).

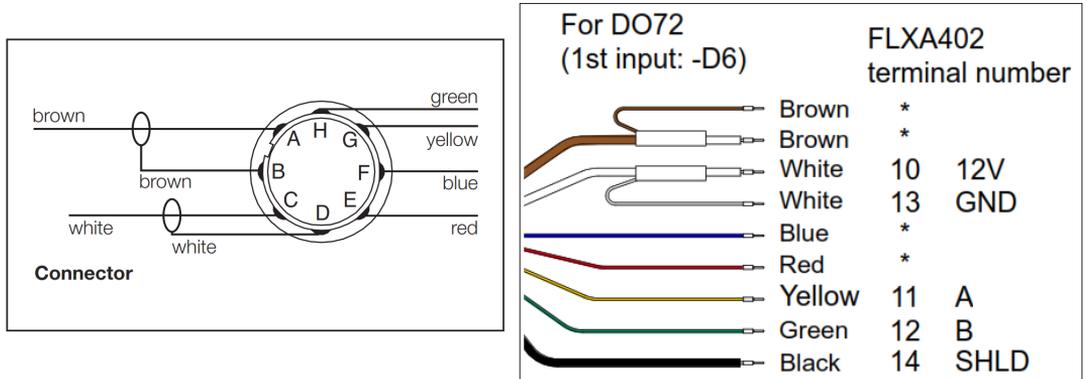


Fig. 9. Connection diagram – WU10-V-D (left) and DO72 sensor wiring details (from FLXA402 manual - right)

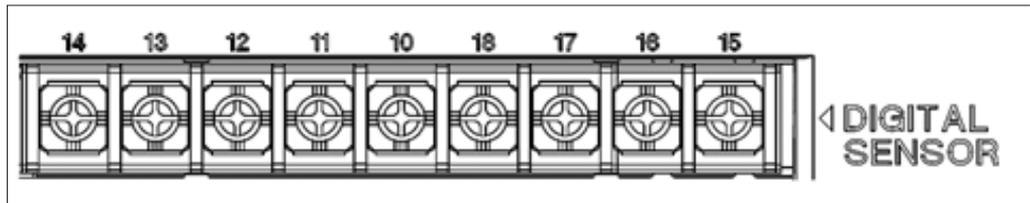


Fig. 10. D6 module terminal assignment for DO72 dissolved oxygen sensor

Table 3: Pin terminal wiring numbering

Wire Pin no.	VP pin	Wire color	Description
11	G	Yellow	RS485 Data (A)
12	H	Green	RS485 Data (B)
13	D	White (Coax2 shield)	GND
10	C	White (Coax2 core)	7 – 30 VDC
14	S	Black	cable shield / probe body

Remark: Cables which are not used should be connected to any terminal of somewhere between 15 to 18.

5.1 DO72 optical DO sensor grounding

The DO72 dissolved oxygen optical sensor housing is made of stainless steel with high corrosion resistance (SUS 316 L).

However, electric potential differences between the DO72 and a tank or other peripherals in the tank can cause immediate corrosion through electrolysis. Therefore, please ensure to avoid electric potential differences between DO72 and the surrounding environment.

We recommend always to connect the DO72 to the protective ground at the installation site. Assign the device housing and cable shield to protective ground.

Especially the length of the cable can influence the ground connection quality.

If the DO72 is installed in a fitting, which is connected to the protective ground, then the connection to the ground will be established via the PG 13.5 stainless steel fitting (see Fig. 11).

If the DO72 is installed in a tank which is NOT connected to the protective ground (e.g. fitting made of plastic or glass), a ground connection should be attached to the DO72 PG 13.5 fitting (see Fig. 12).

You can use a grounding clamp to connect the DO72 directly to protective ground (see Fig. 13 for example).

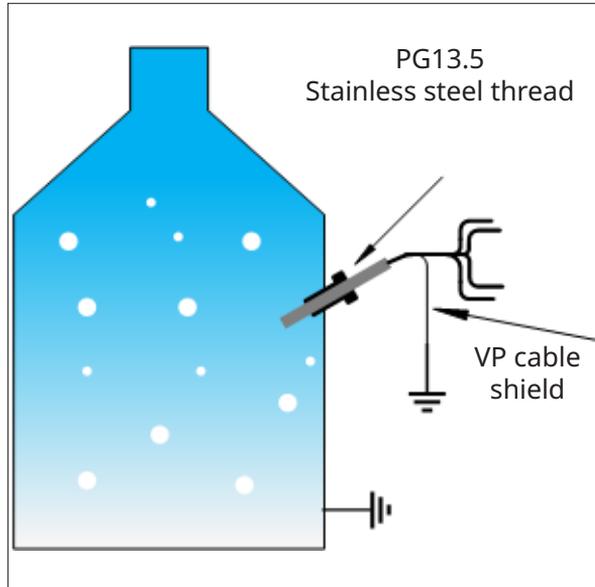


Fig. 11: DO72 grounding when installed in a tank which is connected to protective ground

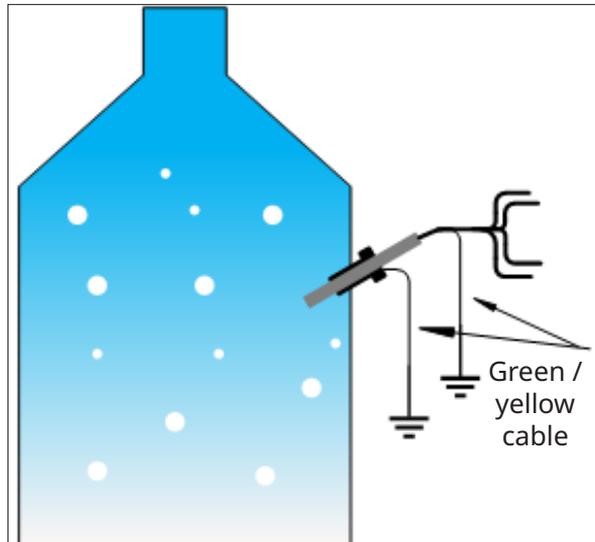


Fig. 12: DO72 grounding when installed in a tank which is NOT connected to protective ground



Fig. 13: Example for a grounding clamp that can be used for connecting an DO72 to protective ground, when installed in a tank without grounding.

6. GENERAL CALIBRATION & MAINTENANCE PROCEDURE

6.1 Pre-Calibration Input

In case the Oxygen Exchange Cap screwed to the DO72 is connected for the first time you can use calibration values of the factory pre-calibration. You can find these values and sensor constants on the Final Inspection Protocol (FIP, see Fig. 15) delivered with your OEC. Use the values in the grey highlighted boxes of the FIP. For the detailed setup instruction please refer to the FLXA402 4-Wire Converter (IM12A01F01-02EN).

6.2 DO72 two-point (Re)calibration

In case of requirement for recalibration of DO72 use Two-point calibration in oxygen free environment (e. g. nitrogen 5.0, 1 % sodium sulfite solution) and a second calibration medium between 1 and 2 % oxygen. Best accuracy is achieved if the calibration temperature is about the same as the temperature during the following measurements.

For calibrating sensor using FLXA402 analyzer please refer to section 4 of FLXA402 user manual IM 12A01F05-01EN.

Procedures how to prepare oxygen free and medium environment in HUMID and DRY calibration is described below:

- 1st Calibration Point HUMID: Oxygen-free water

To prepare oxygen-free water dissolve 1 g of sodium sulfite (Na_2SO_3) in 100 mL water.

Use a suitable vessel with a tightly fitting screw top and label it cal 0. Make sure there is only little headspace in your vessel. Due to a chemical reaction of oxygen with the Na_2SO_3 the water becomes oxygen-free.

Additional oxygen, diffusing from air into the water, is removed by surplus Na_2SO_3 .

Close the vessel with the screw top and shake it for approximately one minute to dissolve Na_2SO_3 and to ensure that the water is oxygen-free. To prepare oxygen-free water you also can use sodium dithionite ($\text{Na}_2\text{S}_2\text{O}_4$).

Fill the calibration solution cal 0 in the vessel you have mounted the DO72 in. Make sure the probe tip is covered completely with the liquid. To minimize the response time, you can slightly stir the solution.

Then follow the instructions in analyzer calibration setting chapter respectively. After recording the first calibration point remove the calibration solution cal 0, fill the vessel with distilled water and stir it for 1 minute. Repeat this procedure at least 5 times to clean the OIM from sodium sulfite.

For storing the calibration solution cal 0 keep the vessel closed after calibration with a screw top to minimize oxygen contamination. The shelf life of cal 0 is about 24 hours provided that the vessel has been closed with the screw top.

- 2nd Calibration Point HUMID: Air-saturated water

Add 100 mL water to a suitable vessel and label it cal 100. To obtain air-saturated water, blow air into the water using an air-pump with a glass-frit (air stone), creating a multitude of small air bubbles, while stirring the solution. After 20 minutes, switch of the air-pump and stir the solution for another 10 minutes to ensure that the water is not supersaturated.

Fill the calibration solution cal 100 in the vessel you have mounted the sensor in. Make sure the sensor surface is covered completely with the liquid. To minimize the response time, slightly stir the solution. Then follow the instructions in analyzer calibration setting chapter respectively.

Dry mode calibration – only for DO72-T-120-AA-VP

- 1st Calibration Point DRY: Nitrogen-saturated atmosphere

As an alternative you can use nitrogen-saturated atmosphere as calibration standard cal 0. Use a commercially available test gas N2 (5.0).

Lead the gas into a vessel filled with distilled water before introducing it in the calibration chamber or a flow-through cell with installed DO72.

Then follow the instructions in analyzer calibration setting chapter respectively.

- 2nd Calibration Point DRY: Water vapor-saturated air

As an alternative you can use water-vapor saturated air as calibration standard cal 100. Place wet cotton wool in a suitable vessel and close the vessel with a fitting screw top or lid. (For inserting the sensor into the vessel, you might have to drill a hole in the lid.) Wait about 2 minutes to ensure that the air is water vapor-saturated.

6.3 Maintenance of the DO71 sensor

6.3.1 Routine inspection

Cleaning of Sensor (Oxygen exchange cap) a visual inspection of the oxygen exchange cap must be made whenever the sensor is calibrated. Any dirt on the oxygen end cap adversely affects your measurements.

If the dirt is spread over the oxygen exchange cap, dip the oxygen exchange cap into clean water and gently wipe the dirt off with a soft cloth or lint-free paper. If the dirt does not come off easily, apply a neutral detergent to the oxygen exchange cap so it can be easier to remove the dirt. Wash the oxygen exchange cap with clean water.

Before every calibration, check that the oxygen exchange cap is not loose. If it is loose, retighten it.

Cleaning procedure:

2% H₂O₂, acidic agents (HCL, H₂SO₄)
max. 4 – 5 % cleaning agents containing
CLO₂ at room temperature.

6.3.2 Exchange of a used OEC

When replacing an OEC please make sure to screw the new cap tightly (Fig. 14) to the probe body, so the black O-ring is no longer visible. If the OEC is not screwed on tightly (Fig. 15) the probe body might get damaged by entering liquid.



Fig. 14: Oxygen exchange cap installed properly



Fig. 15: O-ring visible - wrong OEC installation

最終検査シート Final Inspection Sheet

センサキャップ(OEC)の種類 Type of OEC	Oxygen Exchange Cap DO72-W
部品番号 Part no.	K1531CB
バッチ番号 Batch number	XXXXXX-XXX_XXXX

お客様各位、

指定されたデータは、横河FLXA402 4線式液分析計に入力する必要があります。

手順については、分析装置のユーザーマニュアルを参照してください。

Dear customer,

Data specified must be entered in the Yokogawa FLXA402 4-wire analyzer.

For the procedure refer to the analyzer User Manual.

データ**Data**

大気圧 Atmospheric Pressure	960	hPa
キャリブレーションモード Calibration Mode	Humid	

	位相 Phase signal	基準 Criteria	温度 Temperature	基準 Criteria	振幅 Amplitude	結果 Result
	[°]	[°]	[°C]	[°C]	[μV]	
ゼロ校正 Zero point	56.23	52.00 - 58.00	19.3	18.0 - 22.0	301245	合格 PASS
第2校正点 Calibration 2nd	24.18	18.00 - 26.00	19.3	18.0 - 22.0	13233.9	合格 PASS

応答時間 [t90] Response time [t90]	< 60 s
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センサ定数 Sensor Constants	f1	0.812	dPhi1	-0.07033	dKSV1	0.000412
	m	25.03	dPhi2	-0.00029	dKSV2	0.000001

検査者 Inspected by	xxxxx	日付 Date	xxxx
承認者 Approved by	xxxxx	日付 Date	xxxx

Fig. 16: Example of Final inspection protocol

7. MODEL AND SUFFIX CODES

Table 4: Model and suffix codes

Model	Suffix code	Option code	Description
DO72			Optical Dissolved Oxygen sensor
Range	-T		Trace range (0 – 2 mg/L)
	-W		Wide range (0 – 22,5 mg/L)
Insert length	-120		120 mm
Type	-AA		General purpose
Connection type	-VP		VarioPin connector
Region	-N		Non-specific
Oxygen Exchange Cap	-Y		DO72 OEC ⁵
Option			

Note 5: OEC is dependent on range type.

8. SPARE PARTS

Table 5: Spare parts

Part No.	Part name	Description
K1531CB	OEC	Oxygen Exchange CAP DO72-W
K1531CC		Oxygen Exchange CAP DO72-T
K1531BA	Sealings	O-RINGS EPDM 9x1 (6 PCS.) for OEC
K1500BV		O-RINGS EPDM 11X3 (6 PCS.)
K1500BZ		O-RINGS VITON 11X3 (6 PCS.)
K1500GR		O-RINGS SILICON 10.77x2.62 (8PCS)
K1524AA		O-RING SIL. 10.77x2.62&SLIDE RING (1PC)
K1523JA	Adapters	Adapter Pg13.5 in F*40 PPO
K1523JC		Adapter Pg13.5 in F*40 SS
K1520JN		Adapter M25x1.5 - PG13.5 PVC
K1520JP		Adapter M25x1.5 - PG13.5 RVS
K1500DV		Adapter M25x1.5 - PG13.5 PVDF
K1523JB		Adapter PG13.5 to ¾"NPT PPO
K1523JD		Adapter PG13.5 to ¾"NPT SS
K9148NA		Adapter for mounting PG13.5-sens. For submersion type holder DOX8HS (stainless steel) (/S3)
K9148NB		Adapter for mounting PG13.5-sens. For submersion type holder DOX8HS (polypropylene) (/PP)
K9679CA		For float type holder PB350G, PB360G (polypropylene) (/FPP)
L9920BR	Others	Zero adjusting reagent; Sodium sulfite (Na ₂ SO ₃) 500 g

* The recommendable exchange cycle of a optical exchange cap is 1 time in 12 months.

9. CHEMICAL COMPATIBILITY

		Material												
		Viton			FFKM			Silicon			SS 316(l)			
		Conc. %	Temp. °C											
		20	60	100	20	60	100	20	60	100	20	60	100	
Inorganic acid	Sulfuric acid	10	o	o	o	o	o	o	-	-	-	x	x	x
		50	o	o	o	o	o	o	-	-	-	x	x	x
		95	o	o	o	o	o	o	-	-	-	x	x	x
		fuming	o	o	o	o	o	o	-	-	-	-	-	-
	Hydrochloric acid	10	o	o	o	o	o	o	x	-	-	-	-	-
		sat.	o	o	o	o	o	o	x	-	-	-	-	-
	Nitric acid	25	o	o	x	o	o	o	o	o	x	x	x	x
		50	-	-	-	o	o	o	x	-	-	x	x	x
		95	-	-	-	o	o	o	-	-	-	o	o	o
		fuming	-	-	-	o	o	o	-	-	-	o	o	o
	Phosphoric acid	25	o	o	o	o	o	o	o	o	x	-	-	-
		50	o	o	o	o	o	o	o	o	x	x	x	x
95		x	x	-	o	o	o	o	x	x	o	o	o	
Hydrofluoric acid	40	o	o	o	o	o	o	-	-	-	-	-	-	
	75	o	o	x	o	o	o	-	-	-	-	-	-	
Organic acid	Acetic acid	10	-	-	-	o	o	o	o	o	o	o	o	x
		glacial	-	-	-	o	o	o	o	o	o	o	o	x
	Formic acid	80	-	-	-	o	o	x	o	o	o	x	x	x
Citric acid	50	o	o	o	o	o	o	o	o	o	o	o	o	
Alkali	Calcium hydroxide	sat.	o	o	o	o	o	o	o	o	o	o	o	o
	Potassium hydroxide	50	o	o	o	o	o	o	o	o	o	o	o	o
	Sodium hydroxide	40	x	x	x	o	o	o	o	o	o	o	o	o
	Ammonia in water	30	x	x	x	o	o	o	o	o	o	o	o	o
Acid salt	Ammonium chloride	sat.	o	o	o	o	o	o	o	o	o	x	x	x
	Zinc chloride	50	o	o	o	o	o	o	o	o	o	x	x	x
	Iron(III) chloride	50	o	o	o				o	o	o	-	-	-
	Sodium sulfite	sat.	-	-	-	o	o	o	o	o	o	o	o	o
Basic salt	Sodium carbonate	sat.	o	o	o	o	o	o	o	o	o	o	o	o
	Potassium chloride	sat.	o	o	o	o	o	o	o	o	o	x	x	x
	Sodium sulfate	sat.	o	o	o	o	o	o	o	o	o	o	o	o
	Calcium chloride	sat.	o	o	o	o	o	o	o	o	o	x	x	x
Neutral salt	Sodium chloride	sat.	o	o	o	o	o	o	o	o	o	x	x	x
	Sodium nitrate	50	o	o	o	o	o	o	o	o	o	x	x	x
	Aluminium chloride	sat.	o	o	o	o	o	o	o	o	-	-	-	
	Hydrogen peroxide	30	o	o	o	o	o	o	x	x	x	o	o	o
Oxidizing agent	Sodium Hypochloride	50	o	o	x	o	o	o	o	o	o	x	x	x
	Potassium dichromate	sat.	o	o	o	o	o	o	o	o	o	o	o	o
	Chlorinated lime								o	o	o	x	x	x
	Ethanol	80	x	-	-	o	o	o	o	o	o	o	o	o
Organic solvent	Cyclohexane		o	o	o	o	o	o	-	-	-	o	o	o
	Toluene		-	-	-	o	o	o	-	-	-	o	o	o
	Trichloroethane		x	x	x	o	o	o	-	-	-	o	o	x
	Water		o	o	o	o	o	o	o	o	o	o	o	o

o = can be used x = shortens useful life - = cannot be used Blank = no data currently available

Note : Information in this list is based on our general experience and literature data and given in good faith. However Yokogawa is unable to accept responsibility for claims related to this information.

Remark on Oxygen Exchange Cap membrane compatibility:

Compatibility

No cross-sensitivity to

Cross-sensitivity to

Aqueous solutions, ethanol, methanol

pH 1 – 14, CO₂, H₂S, SO₂, ionic species

Chlorine gas Organic solvents such as pure acetone, toluene, chloroform or methylene chloride

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