

HORIBA



PROCESS ANALYZERS pH•ORP/RESIST•COND/DO

ALPHA
α900 Series



Powerful in process monitoring with microprocessor

Condensed in a compact DIN size, versatile functions provide more simplicity in operation and more efficiency in performance, in addition to accurate monitoring results.

With the appropriate sensors and accessories, either model TD-950 or TD-960 can serve as the most suitable and cost effective monitoring system to meet process, waste water, and control applications.

Automatic calibration capability

At the single touch of a key, the TD-950 and TD-960 is standardized, automatically and efficiently. Utilizing built in memory and advanced circuitry, the transmitter senses when the electrode has reached stability and only then automatically calibrates. Additionally, the transmitter allows for calibration in a buffer whose temperature has been adjusted to the temperature of the liquid to be measured. These innovative pH systems are flexible to differing calibration needs such that one or two point calibration, instantaneous calibration without auto-calibration, or calibration with use of custom-made standard buffers are all easily accomplished.

A pH indicator on a huge display

On the huge display, the TD-950 and TD-960 show all measurement parameters, limits, and functions which can be entered with the use of five touch keys on the front panel as well as test results. With an analog limit indicator on the display, the TD-950 and TD-960 provide at a glance sample status within high and low monitoring limits which can be freely set.



pH display

ORP display

Temperature display

Proportional output control

Equipped with a circuit for proportional output control, the TD-960 is able to transmit more precisely regulated current output to the load for finer and more reliable control than is possible with the standard ON-OFF control provided with both models. This proportional output is time dependent, which is calculated with parameters of a limit value, a value of proportional band, a control cycle, and a deviation value from the limit.



Output held during maintenance

With a function to hold the output signal during maintenance, the TD-950 and TD-960 will not give false readings to ancillary devices and therefore there is no disruption of the process. The preset maintenance outputs on both models further assures the pH system's integrity. In particular, the TD-960 can hold the output current at a preset value.



A variety of ranges for pH and ORP (mV) output

Choose from eight different ranges for each pH and ORP (mV) output. Measurement range appropriate to the application can be selected. The TD-950 and TD-960 can be easily linked to any peripheral device using our isolated current input/output.

Equipped with a large capacity relay

Each contact point is equipped with a large capacity relay of 250 V (AC)/5 A (max. 625 VA), allowing the TD-950 and TD-960 to be connected directly to the load so that valves and/or pumps are actuated and controlled by this complete pH transmitter/controller.

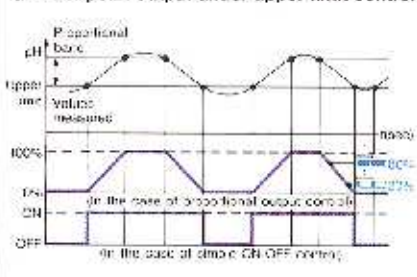
Self-diagnosis for accurate measurement

With microprocessor-controlled self-diagnosis before and during measurement, the TD-950 and TD-960 can detect faults and display error messages; they automatically display an error code notifying the user of there is a faulty sensor by detecting irregular electric potential, poor sensitivity, or improper response time during calibration, while they monitor sensor and wire breakage during measurement.

Memory back-up

Equipped with EEPROM (non-volatile memory), the TD-950 and TD-960 can hold all values of preset parameters and calibrations in case of power failure, and when power resumes they can continue to measure and monitor as before. This memory back-up lasts approximately 10 years even without an electrical connection.

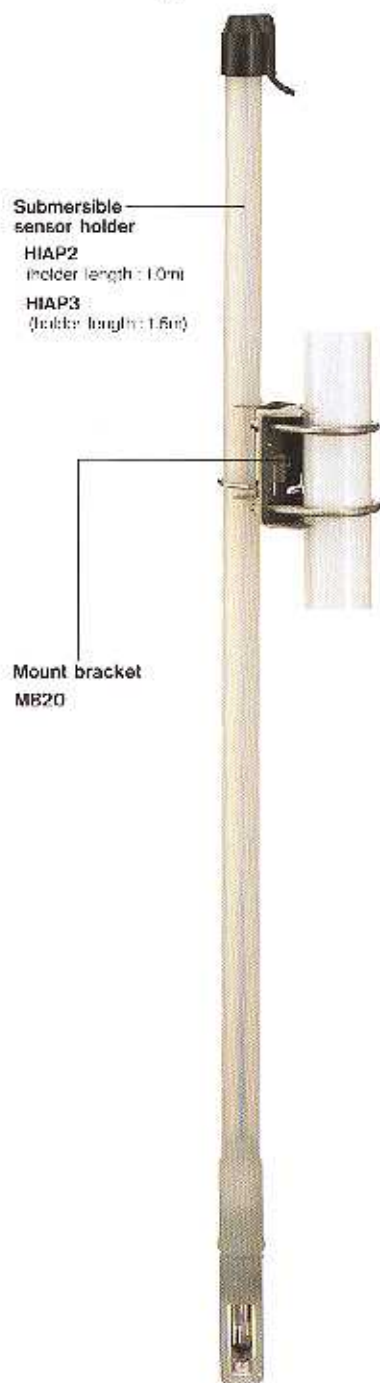
Contact point output under upper limit control



Varieties of system configuration for your specific requirement

Sensor holder (Submersible)

with pipe mount bracket

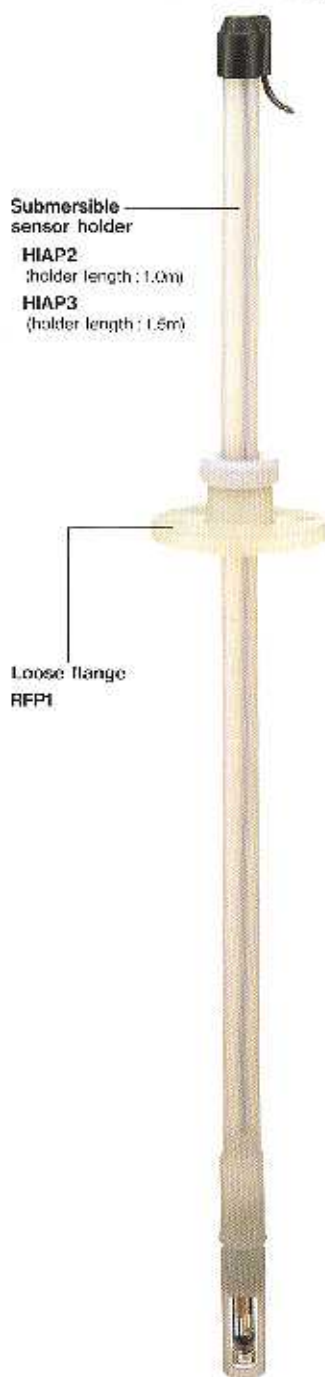


Submersible sensor holder
HIAP2
 (holder length: 1.0m)
HIAP3
 (holder length: 1.6m)

Mount bracket
MB20

Sensor holder (Submersible)

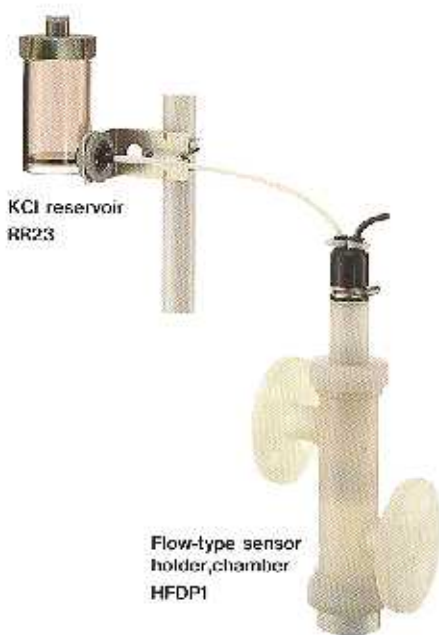
with loose flange



Submersible sensor holder
HIAP2
 (holder length: 1.0m)
HIAP3
 (holder length: 1.6m)

Loose flange
RFPI

Sensor holder (Flow-type)

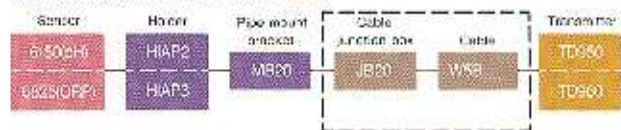


KCl reservoir
RR23

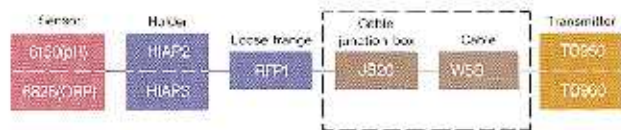
Flow-type sensor holder, chamber
HFDP1

Codes for ordering

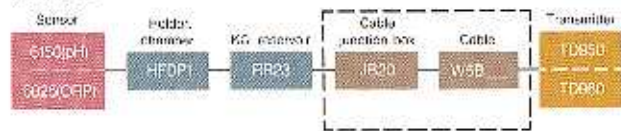
Submersible (with pipe mount bracket)



Submersible (with loose flange)



Flow-type



Transmitter

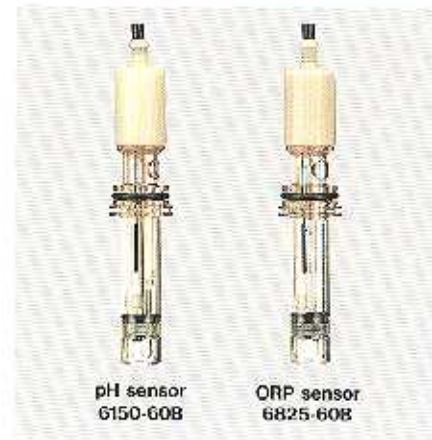


TD-960



TD-950

Sensor



pH sensor
6150-60B

ORP sensor
6825-60B

Extension cable

A 6m lead cable is connected to a sensor. For measurement conducted more than 6m away, a cable junction and an extension cable (maximum length of 100m) are available.



Cable junction box JB20
with 1B-2B pipe mount bracket



Extension cable W5B
for sensor signal transmission specify
the desired length in meters (max. 100m)

Buffer standards

Item	Type	Components	Value	Accessory No.
pH standard (10 bags) Precision ± 0.05 pH	150-1	Phthalate buffer powder	4.00	9003-0027-00
	150-7	Neutral phosphate buffer powder	6.88	9003-0028-00
	150-9	Borate buffer powder	9.22	9003-0029-00
Internal solution of reference electrode (500g)	350	KCl powder		9003-0034-00
ORP standard (10 bags)	160-51	Neutral phosphate buffer + quinhydrone	+95mV	9003-0031-00
	160-22	Phthalate buffer + quinhydrone	+252.5mV	9003-0030-00

SPECIFICATIONS

Transmitter

Model	TD-950	TD-960
Configuration	DIN90-size, panel-mounted type pH/ORP transmitter (indoor use)	
Display	pH: 0 to 14/ORP: ±1400 mV (switched internally) Temperature: -10°C to 110°C (Readouts are toggled from the keypad.)	
Ranges of measurement	8 different output ranges for both pH and ORP measurements. (switched internally): pH: 0-14, 0-10, 2-12, 4-14, 0-0, 0-11, 0-14, 4-10 ORP: ±1400, ±700, ±350, 0-1400, 0-700, -1400 to 0, -700 to 0, 0 to 1000 mV	
Resolution	pH: 0.01 / ORP: 1 mV / Temperature: 0.1°C	
Reproducibility	pH: ±0.01 / ORP: ±1 mV	
I/O signal ranges	4-20 mA/0-16mA (EX) input/output (isolated (switched internally)) Maximum load resistance: 600Ω Linearity: 0.5% F.S.	
Output terminals	Adjustable upper/lower-limit output: contacts a & b Output-during-maintenance: contact a	Adjustable upper & lower limits of output and time-proportional output: contacts a & b Output-during-maintenance: contact a Washing timer output: contact a
Output capacity	250 V (AC), 5A Maximum power 625 VA	
Additional Functions	Automatic "one-touch" calibration: (1) Random one-point or two-point calibration with any buffer standard: pH/pH7/pH8 standard buffers supplied (pH4/pH7/pH10 for US version) (2) Instantaneous calibration (3) Automatic monitoring of electric potential during calibration (4) Instantaneous calibration Self diagnosis with error messages displayed: (1) Calibration error (asymmetry potential, poor response speed, impossible temperature calibration) (2) Electrode failure during measurement (glass membrane breakage, temperature sensor short, wire breakage) (3) Range over measurement	
Temperature compensation sensor	PTR 6.5 kΩ (at 25°C)	
Ambient conditions	-5°C to 40°C, Maximum humidity: 85% RH	
External dimensions	99(W)×96(H)×175(D) mm 3.78(W)×3.78(H)×6.89(D) in	
Power source	(1) 90-132 V AC or 121/180-264 V AC, 50/60 Hz (Select an appropriate type, (1) or (2), for your area)	

Sensor

Model	pH sensor 6150-60B	ORP sensor 6825-60B
Temperature range	-5°C to 80°C	
Liquid junction	Porous Ceramics	
Materials of wetted part	PSF, glass, fluoro rubber, ceramic	PSF, glass, fluoro rubber, ceramic, Pt
Sensor cable length	6m	

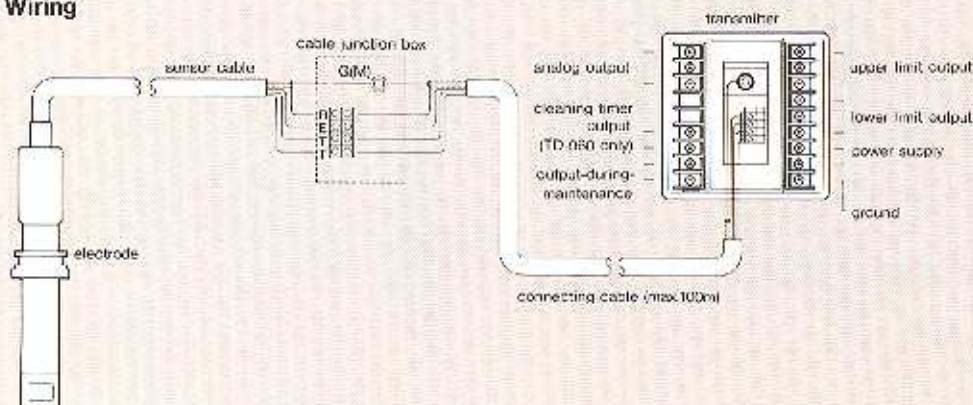
Sensor holder

Model	Submersible sensor holder		Flow-type sensor holder, chamber
	HIAP2	HIAP3	HFDP1
Material	PP		
Temperature range	-10-80°C		
Holder length	1.0m	1.5m	
Fitting flange	-		10K 25A FF

Accessories

Mount bracket MD20: 2D pipe mount bracket for submersible sensor holder. SUS.
Loose flange RFP1: 10K 25A FF loose flange for submersible sensor holder, PP.
KCI reservoir RR20: with 1D pipe mount bracket and 5 m nylon tubing.

Connection and Wiring



All the high-performance features needed, integrated

The α -900 resistivity/conductivity meter comprises a compact DIN 96 panel-mount transmitter, sensor, and accessories for a wide variety of industrial applications. Featuring a sensor with 4 types of cell constant, it satisfies a broad range of measuring requirements, from control of ultrapure water to environmental analysis.

2-channel sensor input

Two sensors can be connected in order to monitor pre-treatment and post-treatment through deionizer. When two sensors are used, the display can be changed over at a set time, and it is also possible to select which sensor to display.

Resistivity/conductivity measurement selection

The desired mode can be selected at the touch of a key to match specific conditions.

High-precision temperature compensation

The built-in microprocessor calculates the conductivity corrected to the internally accepted standard temperature of 25°C. It is also possible for the user to reset the temperature coefficient to other values using the front panel.

Self-diagnosis for accurate measurement

Any temperature sensor abnormality, such as a disconnected cable or short circuit, is displayed by an error code.

Salinity rejection rate computation

With the two sensors mounted upstream and downstream on an ion exchange resin column, the salinity rejection rate of the processing unit can be computed automatically.

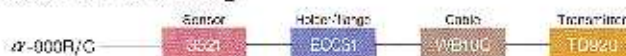


4 types of cell constant

Sensors with 4 different cell constants are available for different applications so that the measurement range appropriate to the sample can be selected.



Codes for ordering



Note) Two sensors can be connected to the TD-920 unit. In such case, add another sensor line to the example above.



	Model	Specifications
Sensor	3521	Cell constant 0.01 Short-cell type
	3531	Cell constant 0.01 Long-cell type
	3541	Cell constant 0.01 Integral cable type
	3522	Cell constant 0.1 Short-cell type
	3532	Cell constant 0.1 Long-cell type
	3523	Cell constant 1.0 Short-cell type
	3533	Cell constant 1.0 Long-cell type
	3524	Cell constant 10 Short-cell type
3534	Cell constant 10 Long-cell type	
Holder	ECC: S	Material: SUS-316
	X	Material: Others
	I	Filling: PT 1/4 female
	X	Filling: Others
Flange	ECF: S	Material: SUS-316
	V	Material: PVC
	P	Material: PP
	I	Flange Size: 10 k 40 A
	X	Flange Size: Others
Extension cable*	WB10C	10 m
	WB20C	20 m
	0	None (for 3541)
Transmitter	TD920	Power source: (1) 80 = 132 V AC, 50/60 Hz (2) 180 = 284 V AC, 50/60 Hz (Select an appropriate type, (1) or (2), for your area)

* If using in the resistivity mode, always specify "WB10C".

in one compact body

ALPK
EX900R/C

SPECIFICATIONS

Transmitter

Model	TD-920
Configuration	DIN86 size, panel-mounted type (indoor use)
Principle	Alternating bipolar measurement
Range of measurement	Resistivity : 0 - 20 M Ω -cm (transmission output range), 0 - 100 M Ω -cm (display range) (Cell constant : 0.01 Min, resolution : 0.01 M Ω -cm) Conductivity : 0 - 1/2/5/10 μ S/cm (Cell constant : 0.01 Min, resolution : 0.001 μ S/cm) 0 - 10/20/50/100 μ S/cm (Cell constant : 0.1 Min, resolution : 0.01 μ S/cm) 0 - 100/200/500/1000 μ S/cm (Cell constant : 1.0 Min, resolution : 0.1 μ S/cm) 0 - 1/2/5/10 mS/cm (Cell constant : 10 Min, resolution : 0.001 mS/cm) Temperature : -10°C to 110°C (for display only)
Reproducibility	Within $\pm 0.5\%$ F.S. (under specific conditions)
Transmission output	4 - 20 mA / 0 - 16 mA (DC) Input/output isolated (switched internally) Maximum load resistance : 500 Ω Linearity : $\pm 0.5\%$ F.S.
Sensor connections	2 channels (main #1, sub #2) * Simultaneous output is not possible. Choose channel #1 or #2, or output alternately. For either channel, only the resistivity mode or the conductivity mode can be used.
Output terminals	Upper/lower-limit output : contacts a & b Output-curing-maintenance : contact a Channel output : contact a
Output capacity	250 V AC, 5A Maximum power 625 VA
Error messages	Impossible temperature calibration, temperature sensor disconnected, temperature sensor short, exceeds maximum temperature in range, below minimum temperature in range, range over measurement
Temperature compensation sensor	PTR 0.8 k Ω (temperature calibration points : max. 2)
Temperature coefficient	0.0 - 5.0 %/°C (Any desired setting can be input)
Ambient conditions	-5°C to 40°C, Maximum humidity : 85% RH
External dimensions	96(W)X90(H)X175(D) mm 3.78(W)X3.78(H)X6.88(D) in.
Power source	(1) 80 - 132 V AC, 50/60 Hz (2) 180 - 264 V AC, 50/60 Hz (Select an appropriate type, (1) or (2), for your area)

Sensor

Model	3521, 3531, 3541	3522, 3532	3523, 3533	3524, 3534
Cell constant	0.01	0.1	1.0	10
Temperature range		0°C to 100°C		0°C to 80°C
Pressure range			0 - 5 kgf/cm ²	
Electrode material			Titanium	
Materials of wetted part	SUS-316, PPS PVDF		SUS-316, PPS PVDF, PCTFE	PP



Small in size, large in performance ; the latest DO

The α -900 dissolved oxygen meter comprises an indoor panel-mount transmitter, sensor, and accessories for industrial process applications and test plants. The compact DIN 96 transmitter is equipped with so many advanced functions that this DO meter practically operates itself.

Automatic calibration

The TD-980 can be calibrated in air or solution at the touch of a key. Just press the key with the sensor immersed in the saturated solution or exposed to the ambient air.

Automatic temperature compensation

The built-in microprocessor automatically compensates for the thermal properties of the sensor and the saturated dissolved oxygen in the sample. Accurate measurement is guaranteed regardless of sample conditions.

Automatic salinity correction

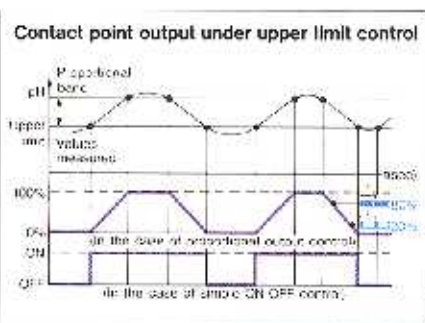
The TD-980 automatically makes salinity correction for accurate data output. It is now possible to measure DO regardless of the salt concentration of the sample.

Range selection

The transmittance and measurement ranges appropriate to the samples can be selected from among nine different ranges.

Proportional output control

Either a simple ON/OFF control or proportional output control which regulates output time depending on deviation from the limit values is possible.



Cleaning control

Equipped with cleaning control contact output which makes it possible to set sensor cleaning time, cleaning cycle, and waiting time right at the transmitter.

Disposable galvanic oxygen electrode

There is no need to change the membrane when replacing the electrode, making replacement a job that just about anybody can do. In addition, the disposable sensor provides higher quality at a lower cost.



Codes for ordering

Submersible (with 2 m holder)

α-90000 — Probe DOP2 — Holder EX11 — Transmitter TD980

	Model	Specifications
Probe	DOP2	6.8 kΩ thermostat, 10 m cable
Holder	DOI	1 Length: Submersible type 2 m, PVC
		2 Length: Submersible type 4 m, PVC
	DOF	1 Length: Flow type, panel mount, PVC
		2 Length: Flow type, wall mount
	0	None
Transmitter	TD980	Power source: (1) 90 — 132 V AC, 50/60 Hz (2) 180 — 264 V AC, 50/60 Hz (Select an appropriate type, (1) or (2), for your area.)

Air jet cleaner (option)

CCU-20 — Control unit P — Power source 100 — Holder A

	Model	Specifications
Control unit	P	With 2D pole mount brackets
Power source	W	Wall mount
	100	100 V AC
	110	110 V AC
	115	115 V AC
	200	200 V AC
	220	220 V AC
Holder	240	240 V AC
	A	Submersible type 2 m, PVC
	B	Submersible type 4 m, PVC
	C	Flow type

SPECIFICATIONS

Transmitter

Model	TD-980
Configuration	DIN 96 – size, panel-mount type (indian size)
Principle	Galvanic cell
Range of measurement	0 – 25 mg/l Temperature : –10°C to 110°C (for display only)
Range of transmission output	0 – 0.2, 0.5, 1.0, 2.0, 5.0, 10, 15, 20, 25 mg/l
Transmission output	4 – 20 mA / 0 – 16 mA (DC) Input/output isolated (switched internally) Maximum load resistance : 500Ω Linearity : ±0.5% F.S.
Reproducibility	Within ±0.2% F.S. (under specific conditions) When connected to 5400 Sensor
Output terminals	Upper/lower-limit output : contacts a, b Output-during-maintenance : contact c Cleaning control output : contact d
Output capacity	250 V AC, 5A Maximum power 625 VA
Response	90% response within 2 minutes (except temperature response) (when connected to 5400 Sensor)
Error messages	Impossible temperature calibration, temperature sensor disconnected, temperature sensor short, exceeds maximum temperature in range, below minimum temperature in range, poor sensitivity, zero calibration abnormality, range over measurement
Calibration	Zero : In zero solution Span : In ambient air or saturated solution
Temperature compensation range	0°C to 40°C
Salinity compensation range	0 – 5.0%
Temperature compensation sensor	PTC 6.6 kΩ (temperature calibration points : max. 2)
Ambient conditions	–5°C to 40°C, Maximum humidity : 95% RH
External dimensions	96(W)×96(H)×175(D) mm 3.78(W)×3.78(H)×6.88(D) in.
Power source	(1) 80 – 132 V AC, 50/60 Hz (2) 180 – 264 V AC, 50/60 Hz (Select an appropriate type: (1) or (2), for your area)

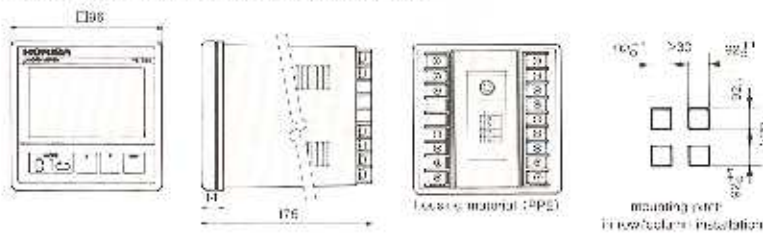
Sensor

Model	5400
Temperature range	0°C to 40°C
Pressure range	0 – 0.1 MPa (0 – 1 kgf/cm ²)
Materials of wetted part	PVC, PTFE, Ti, Fluorine-base O-ring

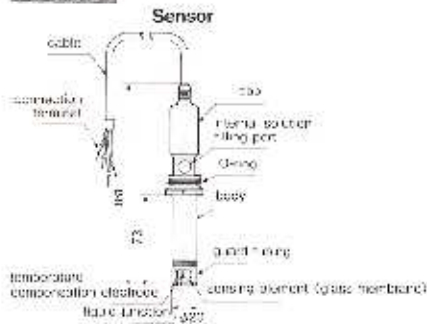


DIMENSIONAL OUTLINES (Unit : mm)

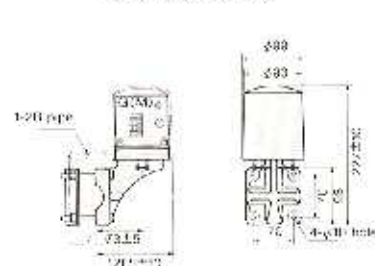
Transmitter (α -900pH, α -900R/C, α -900DO)



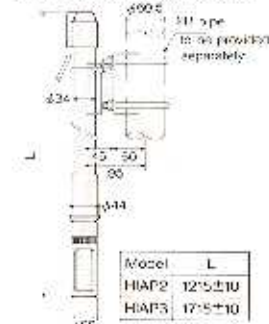
α -900pH



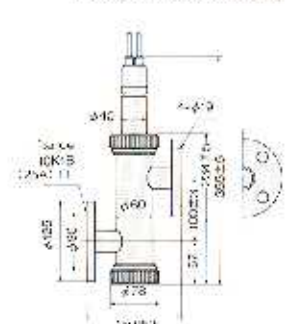
Cable junction box



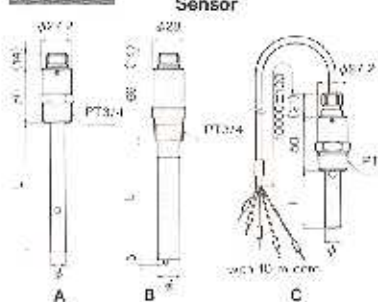
Submersible sensor holder



Flow-type sensor holder

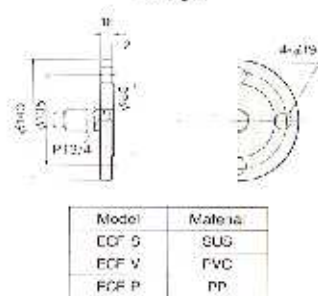


α -900R/C



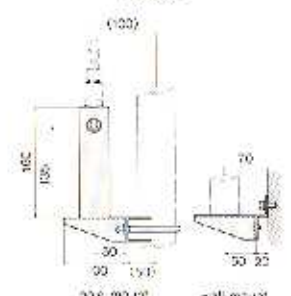
Model	Cell constant	L	ϕ
A			
3521	0.01	52	14
3531	0.01	120	14
3522	0.1	50	14
3532	0.1	120	14
3523	1.0	50	10.5
3533	1.0	120	10.5
B			
3524	10	115	20
3534	10	145	20
C			
3541	0.01	50	14

Flange

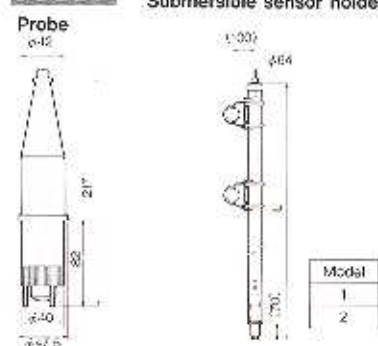


Model	Material
ECF S	SUS
ECF V	PVC
ECF P	PP

Holder



α -900DO

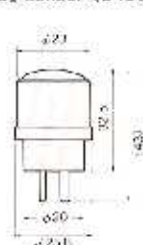


Model	L	Material
1	2000	PVC
2	4000	PVC

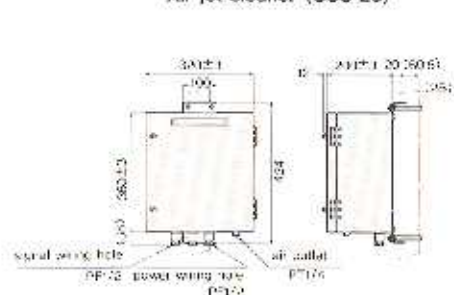
Flow-type sensor holder



O₂ sensor (54100)



Air jet cleaner (CCU-20)



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