

# General Specifications

Model SC21  
Industrial pH Electrodes

GS 12B06J02-01EN-P

## ■ Overview

Selecting the proper pH electrode for an application can be a challenging exercise.

The heart of a pH measuring loop is the electrodes. Yokogawa has designed a wide range of electrodes to ensure this heart keeps beating under the most severe conditions.

A high degree of standardization makes it possible to mount any electrode in the standard program of fittings.

The combination of electrode plug and cable socket is watertight and temperature is resistant up to 130°C.

Colour-coded strips on electrodes and cables and clear identification of sensor specifications make incorrect installation virtually impossible.

## ■ Features

- Dome-shaped membrane for “Heavy Duty” applications.
- Wide range of electrodes to suit almost all process conditions.
- Colour code strips for easy identification of electrodes and cables.
- High degree of standardization for mounting in various flow, insertion- and immersion fittings.
- Separate electrode system for high accuracy applications.
- Reference sensors with a junction made of ceramic, PTFE, pNa glass or Zirconium.
- Combination electrode with external liquid earth.

The SC21 series, Yokogawa’s trusted range of combination pH electrodes for many years still have the same variety of options, making it easy to find the best electrode for each application.



## ■ 1. General Specifications SC21(C)

### Characteristics SC21(C)-AGP26, SC21-ALP26

- High quality Ag/AgCl reference system (pin) which can stand high temperatures and temperature fluctuations.
- Double junction (thickened saturated KCl-solution).
- The built-in salt bridge prevents poisoning of the reference system.
- Heavy duty glass membrane for prolonged operation in corrosive, abrasive and fouling environments (withstanding traces of HF).
- A large area of PTFE junction to resist fouling.

### Characteristics SC21C-AGP64, SC21-AGP24

- Ag/AgCl wire reference system.
- pH bulb with cage protection.
- Less maintenance by the combination of gelled electrolyte and porous PTFE.
- 3.3 m KCl electrolyte.

### Characteristics SC21C-AGC55

This flowing electrolyte sensor uses a ceramic reference junction, with the electrolyte (3.3 molal KCl). The flow of electrolytes through the junction, while small, remains the safest way to prevent clogging and to protect the internal reference against poisoning and diffusion.

- For tough applications where pollution of the reference system is to be expected.
- Low ionic application where the positive flow of electrolyte provides the conductivity needed to measure pH (< 50  $\mu$ S/cm)
- Heavy duty pH-sensitive glass.
- Flowing reference system for pollution resistance, and highly stable reference potential.
- PG13.5 standard DIN electrode connection.
- Adapter to ensure compatibility with full fitting program.
- Use in combination with the pressurizable electrolyte reservoir to obtain a positive flow toward the process (K1520YA).

For compatibility with the Yokogawa "Compact" range of electrode holders, the SC21C-AGC55 combined sensor, has a PG13.5 DIN connector. For temperatures higher than 85°C it is recommended to use the PVDF

### Characteristics SC21-AAP26

- High quality Ag/AgCl reference system (pin) which can stand high temperatures and temperature fluctuations.
- Built-in salt bridge to prevent poisoning of the reference system.
- A large area of PTFE junction to resist fouling to a high

#### 1.1 Measuring elements

Sensor type : pH glass electrode  
Membrane : G or L glass

Glass shape  
- AAP26 : Bulb  
- AGP24 : Bulb  
- AGP26 : Dome  
- ALP26 : Dome  
- AGP64 : Bulb  
- AGC55 : Heavy duty dome

Glass impedance range @25°C  
- AAP26 : 250-400 M $\Omega$   
- AGP24 : 75-150 M $\Omega$   
- AGP26 : 120-200 M $\Omega$   
- ALP26 : 500-900 M $\Omega$   
- AGP64 : 75-150 M $\Omega$   
- AGC55 : 120-200 M $\Omega$

Reference type  
- AAP26 : Non flow  
- AGP24 : Non flow  
- AGP26 : Non flow  
- ALP26 : Non flow  
- AGP64 : Non flow  
- AGC55 : Flow

Reference system : Ag/AgCl

Reference liquid  
- AAP26 : Saturated KCl  
- AGP24 : 3,3 M KCl  
- AGP26 : Saturated KCl  
- ALP26 : Saturated KCl  
- AGP64 : 3,3 M KCl  
- AGC55 : 3,3 M KCl

Junction type : Single junction  
Impedance @25°C : < 5k $\Omega$

#### 1.2 Wetted parts construction materials

Sensor body : Glass  
O-rings : FKM  
Reference junction : PTFE (AGC55 Ceramic)

#### 1.3 Dynamic specifications (at 25°C)

Response time pH step (7 to 4)  
- AAP26 : < 15 sec for 90%  
- AGP24 : < 15 sec for 90%  
- AGP26 : < 15 sec for 90%  
- ALP26 : < 15 sec for 90%  
- AGP64 : < 10 sec for 90%  
- AGC55 : < 15 sec for 90%

Stabilisation time 0.02 pH/10sec:<30 sec

#### 1.4 Operating range

pH  
- AAP26 : 0 to 14  
- AGP24 : 0 to 14  
- AGP26 : 0 to 14  
- ALP26 : 0 to 14  
- AGP64 : 0 to 14  
- AGC55 : 0 to 14

Flow rate  
- AAP26 : N/A  
- AGP24 : N/A

- AGP26	: N/A
- ALP26	: N/A
- AGP64	: N/A
- AGC55	: Max. 3 ml/day@10Kpa*

\* Only with a pressure reservoir

#### Temperature

- AAP26	: 0°C ... 110°C
- AGP24	: 0°C ... 80°C
- AGP26	: 0°C ... 110°C
- ALP26	: 20°C ... 130°C
- AGP64	: 0°C ... 80°C
- AGC55	: 0°C ... 110°C*

\* only when atm > vapor pressure to prevent boiling, otherwise 0°C ... 100°C\*

#### Pressure

- AAP26	: 1,5 kPa ... 500 kPa
- AGP24	: 1,5 kPa ... 500 kPa
- AGP26	: 1,5 kPa ... 500 kPa
- ALP26	: 1,5 kPa ... 500 kPa
- AGP64	: 1,5 kPa ... 500 kPa
- AGC55	: 1,5 kPa ... 500 kPa

Conductivity : > 50 µS/cm

### 1.5 Shipping Details

#### SC21(C)

Package size (LxWxH)	: 260 x 45 x 45 mm
	: 10.2 x 1 x 1 inch
Package weight (max.)	: 0.08 kg (0.17 lbs)

#### SC21C-AGC55

Package size (LxWxH)	: 300 x 95 x 73 mm
	: 11.8 x 3.7 x 2.8 inch
Package weight (max.)	: 0.22 kg (0.48 lbs)

### 1.6 Environmental conditions

Storage temp.	: -10 to 50 °C
	: (14 to 122 °F)

### 1.7 Regulatory standards

#### CE

- RoHS Directive 2011/65/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.

#### UKCA

- RoHS Directive 2011/65/EU The restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

## 2. Dimensions (Units in mm)

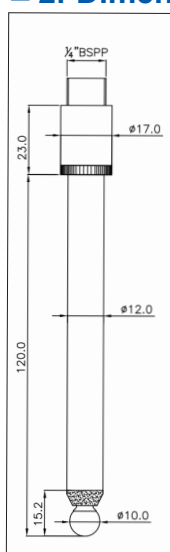


Fig. 1: SC21-AAP26

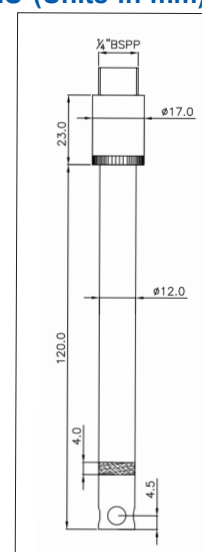


Fig. 2: SC21-AGP24

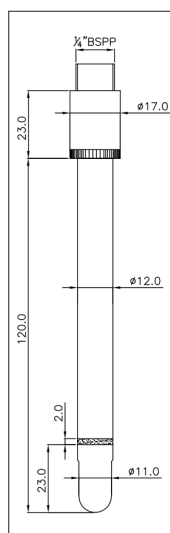


Fig. 3: SC21-AGP26  
SC21-ALP26

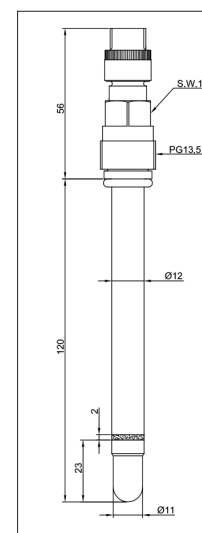


Fig. 4: SC21C-AGP26

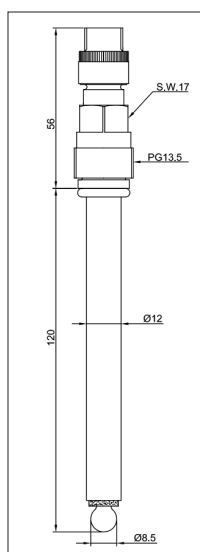


Fig. 5: SC21C-AGP64

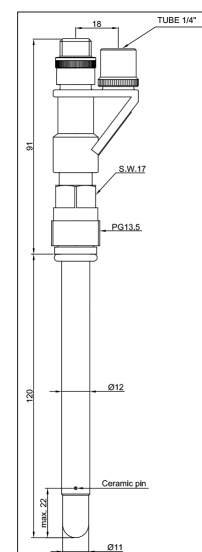


Fig. 6: SC21C-AGC55

### ■ 3. Model Codes and Parts

Table 1: Model & Suffix codes SC21

Model	Suffix Code	Option code	Description
SC21			Combined pH
	-AAP26		Comb. pH, non flow
	-AGP24		Comb. pH, non flow
	-AGP26		Comb. pH, non flow, heavy duty
	-ALP26		Comb. pH, non flow, heavy duty
	-AGC11		Comb. pH, DIN size

Table 2: Model & Suffix codes SC21C

Model	Suffix Code	Option code	Description
SC21C			Combined pH with compact connector
	-AGP26		Comb. pH, non flow, heavy duty
	-AGP64		Comb. pH, non flow
	-AGC55		Comb. pH, flow, heavy duty

### ■ 4. Spare Parts

Table 3: Sealing spare parts

Product	Description
K1500BZ	O-rings Viton 11x3 (6Pcs)
K1500FU	KCl reservoir PVC for F*20
K1500GA	5 m tube for KCl reservoir
K1520FJ	Tubing set, chem. cleaning 5m
K1520FK	Tubing set, chem. cleaning 10m

Table 4: Adapter spare parts

Product	Description
K1500DV	Adapter M25x1.5 - PG13.5 PVDF
K1520JL	Adapter Y-Cap - PG13.5 SS
K1520JN	Adapter M25x1.5 - PG13.5 PVC
K1520JP	Adapter M25x1.5 - PG13.5 SS
K1523JA	Adapter PG13.5 in F*40 PPO
K1523JB	Adapter PG13.5 to 3/4"NPT PPO
K1523JC	Adapter PG13.5-sensors in F*40 SS
K1523JD	Adapter PG13.5 to 3/4" NPT SS
K1520YA	/KR for PD/PF/PS20 holders

Table 5 Consumable spare parts

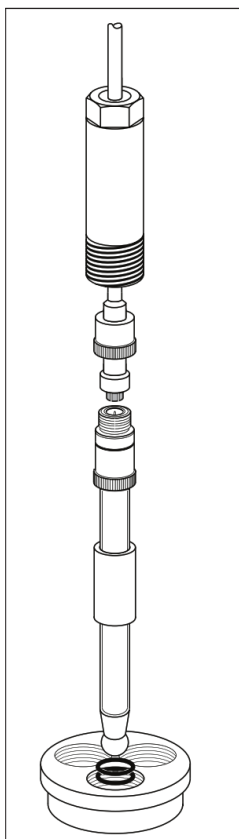
Product	Description
K1500GF	1 Molal KCl sol. 250 ml
K1500GG	1 Molal KCl sol. 250 ml, thickened
K1520VA	3.3 Molal KCL solution
K1520VN	3.3 molal KCl sol. 250 ml. thickened

### ■ 5. Cables

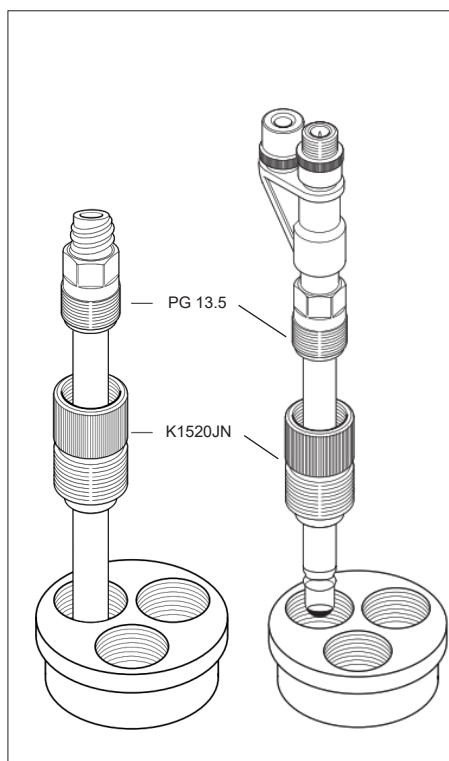
Table 6: Model & Suffix codes WU20

Model	Suffix Code	Option code	Description
WU20			Industrial pH/ORP cable
	-LT		Triax
		01	1 meter cable
		02	2 meter cable
		05	5½ meter cable
		10	10 meter cable
		15	15 meter cable
		20	20 meter cable
		25	25 meter cable

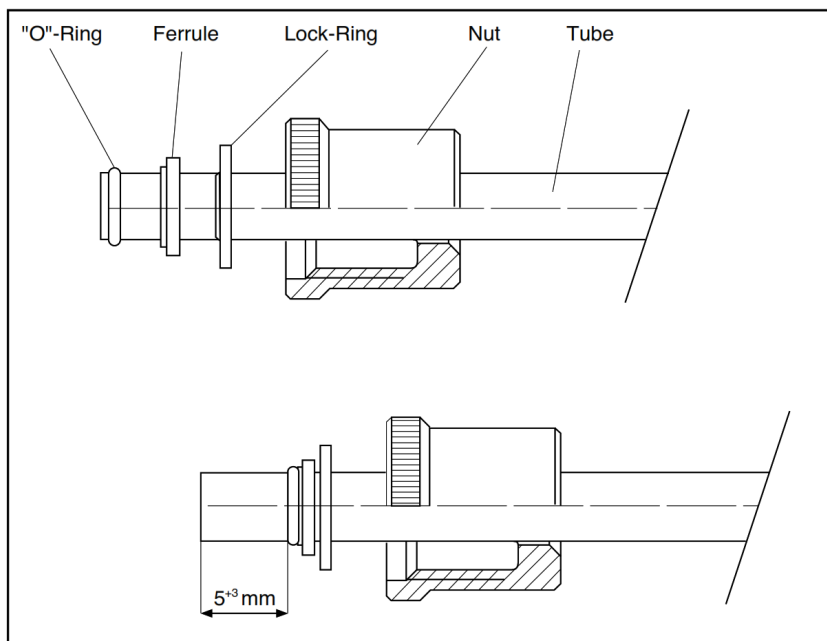
## ■ Addendum 1: Typical Installations



**Figure 7:** Standard mounting with mounting set FP20-R12, FP20-S12



**Figure 8:** Mounting PG13.5 in Yokogawa fitting using the adapter K1520JN (PVC-C) or K1500DV (PVDF)



**Figure 9:** Mounting the tube connection for the SC21C-AGC55

## ■ Addendum 2: Available Model Codes

Table 6: SC21(C) pH Electrode Available models

<b>MS-code</b>	SC21-AAP26
	SC21-AGP24
	SC21-AGP26
	SC21-ALP26
	SC21-AGC11
<b>MS-code</b>	SC21C-AGP26
	SC21C-AGP64
	SC21C-AGC55

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