TSA8045 Sodium Instrument (automatic controlled atmosphere method)

Trace sodium

Gas permeability method

Brief description

The sodium instrument of SYCAMIN company 8045 type can be used for measuring the sodium in industrial water of high purity.

Sodium ion is a kind of ion, content of which is very high in aerated water of power station boiler. The content of sodium ion can supply significant information about the whole purity. The design of monitor of 8045 type sodium ion strictly accords with sodium measurement standard of nuclear power station and mineral fuel power station, supplying quick response speed and high-precision measurement to high-low concentration sodium.

Application fields

Be used for feedwater treatment system of high pressure steam boiler in steam electric power plant, condensate polishing system, leakage detecting system of condenser as well as other industrial water treatment systems, such as semiconductor, medicine and etc.

System description diagram

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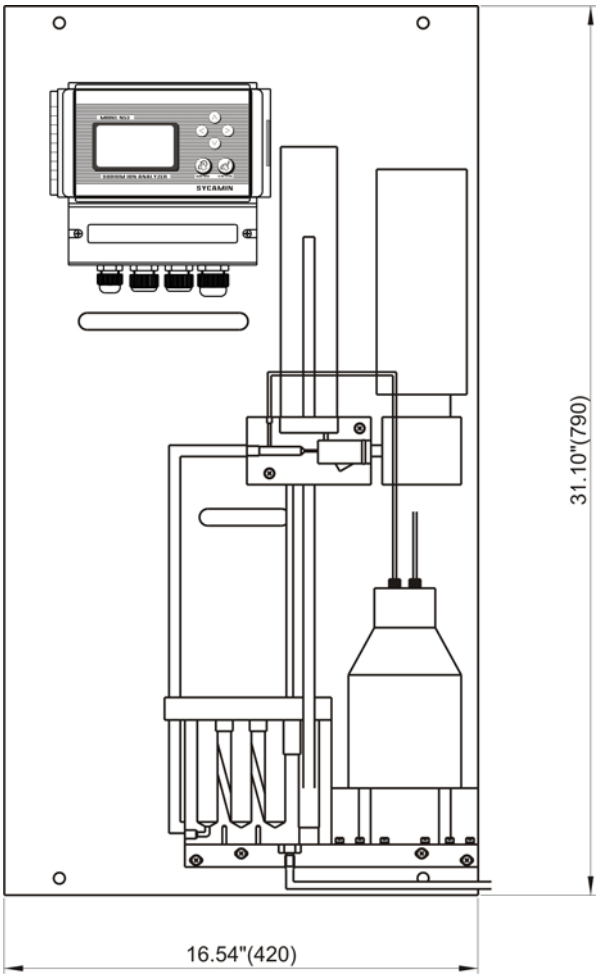
Unit: inch (mm)



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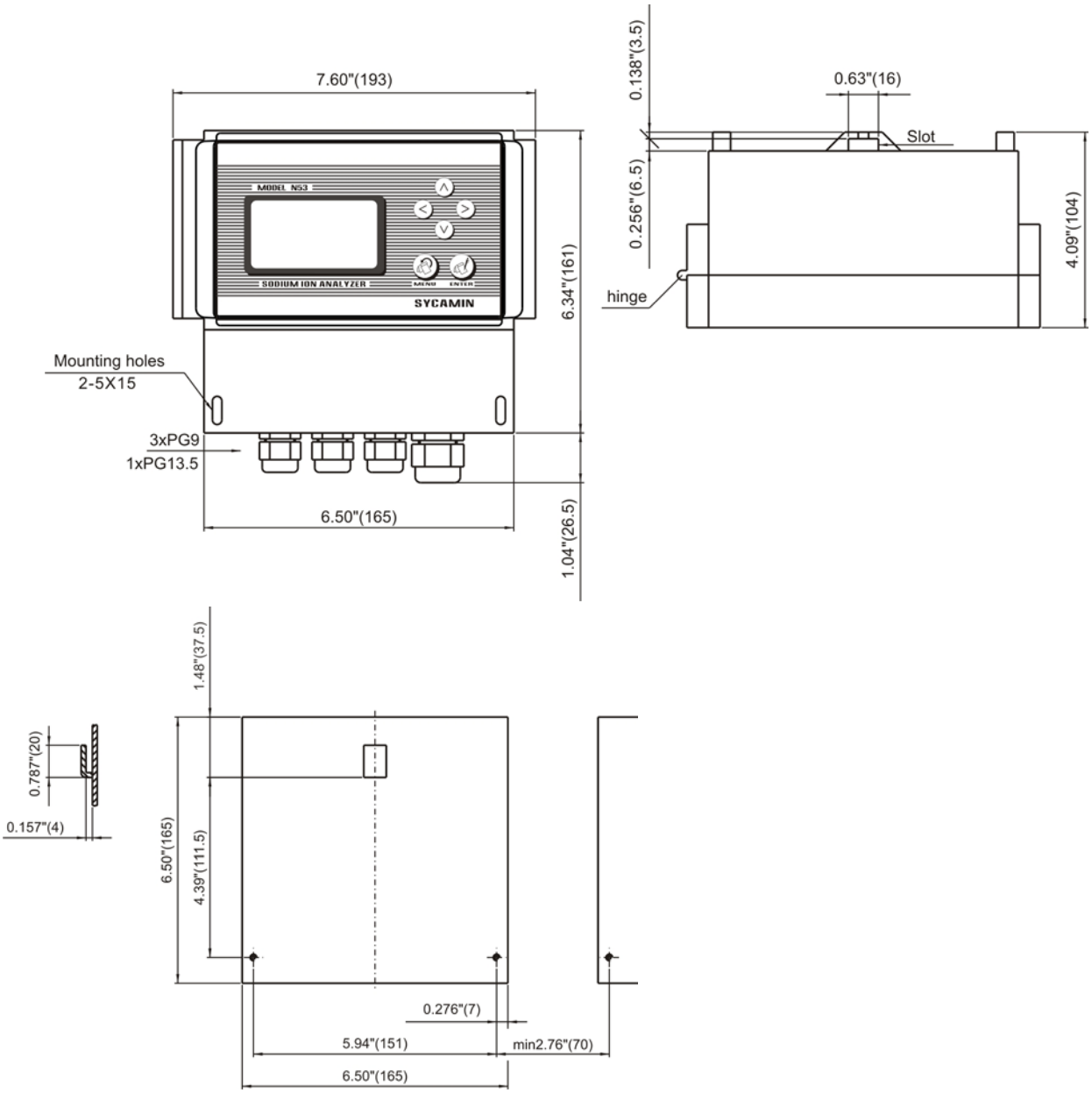

System features

- 304SS stainless steel tank, wall-hung type installation
- Performance is stable, accurate and reliable
- Structure is compact, operation is convenient, consumables and maintenance volume is little
- Single-point or two-point calibration of manual operation with convenient operation
- Long-life sodium electrode and reference electrode with little interference
- Automatic temperature compensation
- Self diagnosis of instrument measurement
- There is no need of battery for voltage monitoring and parameter storage
- Sample water access of new type and adjusting reagent of pH value are added into system
- Measuring value and temperature of sodium can be output by 0/4 - 20 mA galvanic isolation
- Signal isolation input and output of sodium measuring value
- Electrode connection: rapidly insert and connect terminal

Principle description

Measuring method is direct potential method. Use the electrode of high sensitive sodium glass to conduct measurement. The relation between potential difference of glass electrode and reference electrode with concentration of sodium conforms to Nengsite law:

$$E = E_0 + \frac{R * T}{F} * \lg K\, C_{Na+}$$

When the measurement of sodium ion is lower than 1 ppb, there is necessary to use sensitive electrode of sodium ion made up by special glass material, thus being able to guarantee continuous electrode response.

In the process of measuring sodium, need to eliminate the interference of ammonium ion and pH value of sample water in sample water. Be available to add suitable alkalified reagent to influence the generation of ammonium ion and enlarge pH value of sample water.

When limit of detection of sodium ion is 0.1 ppb, sample water pH must be > 10, and demand the best regulating effect; select diisopropylamine not to be diluted as alkalified reagent for 8045 type sodium. (The regulating of diisopropylamine to pH value of sample water always keeps constant, and it will not generate hazardous wastes)

System performance

Requirements of sample water	
Velocity of flow	30 ~ 60mL/min
Pressure	0.3 ~ 3 bar (4 ~ 43PSI)
Temperature	5 ~ 45℃ (41 ~ 113℉)
Suspended substances with solid state	< 10ppm, without grease
pH	**pH≥7.0**
Concentration of ammonium	< 10 ppm
Acidity	< 50 ppm ($CaCO_3$)

Measured variable	**pNa**	**pH**	**Temperature**
Range of measurement	0.023 ~ 2300ppb (4.00 ~ 9.00pNa)	7.00 ~ 13.00pH	68.0 ~ 302.0℉ (-20 ~ +150.0℃)
Resolution	0.01ppb	0.01pH	0.1℃

Relay type/output	Five relay output (two are matched), SPST (C type) UL level 3A, 110/220 VAC, 3A@30VDC contactor
Operating mode	Relay can conduct drive through pNa/pH/temperature/washing measured by selected principal parameter
Function mode	Control: Be able to set as: low low alarm point, low alarm point, high alarm point, high high alarm point State: Be able to set as: normally open or normally closed
Temperature compensation	Select Pt 1000 RTD temperature element just can conduct temperature compensation automatically in the range of 32.0 ~ 203.0℉ (0 ~ 95.0℃), or user manually inputs a temperature set by user himself to conduct compensation.
Calibration method	Manual calibration: 2 points calibration: use standard buffered solution, the instrument will automatically generate zero point and slope. 1 point calibration: use standard buffered solution, the instrument will automatically generate zero point. Automatic calibration: Use automatic calibration apparatus, there is no need for manual work to participate (match)

System performance

Analog output	Two groups of independent 0/4～20mA, each of which possesses the data accuracy of 0.004mA (12 digits), can maximally drive the load of 550Ω.	
Communication way	RS-232	Make it possible to use IBM compatible personal computer and instrument to realize the communication that determinator determines data.
	HART protocol (selectable)	Make it possible to use appropriate hand-held terminal or data system to realize the configuration and invocation of multi-determinators' measured value through the communication link created by HART software.
	Stylus printer function (selectable), GPRS launching machine (selectable)	
Storage backup (when outage, it will not be lost)	All the users setting are stored in EEPROM (EEPROM).	
EMI/RFI eligibility	In the respect of conduction and radiation launch as well as anti-disturbance features, it conforms to American criterion, reaching to European standard and according with CE certification. For launching features, it conforms to EN50081-2; for immunological characteristics, it conforms to EN50082-2.	
Electrical certification	General purpose (to be examined and approved): UL , C-UL , FM and CENELEC The second part (to be examined and approved): UL, C-UL, FM: A, B, C, D, F and G groups The second area (to be examined and approved): CENELEC: IIC group	
Instrument determines performance	Accuracy: 0.1% of the full scale Stability: each 24h is 0.05% of the full scale (non-accumulation) Repeatability: less than 0.1% of the full scale Temperature drift zero point and full scale: less than 0.03% of the full scale per ℃.	

System performance

Housing of displayer	Front panel of polycarbonate, mounting bracket of nylon installation, hardware of stainless steel
Level of protection	IP65
Display	It is LCD of figure dot-matrix (LCD), resolution is 128×64 pixel
Net weight of controller	Approx. 1.8 pounds (0.8 kg)
Power requirement	90-130 VAC, 50/60 Hz or 190-260 VAC, 50/60 Hz
Power consumption	Max. 10VA
Environmental conditions	
When operating	-4 ~ 140℉ (-20 ~ 60℃); relative humidity 0 ~ 95%, no condensation.
When storing	-22 ~ 158℉ (-30 ~ 70℃); relative humidity 0 ~ 95%, no condensation.
More info	**www.sycamin.de**