

## PROCESS SULPHUR ANALYZER

Models: SCA-200/400

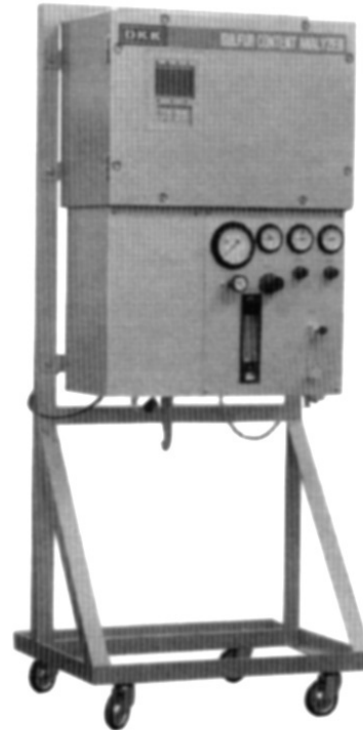
This instrument measures the sulphur concentration in petroleum products such as light gas oil (LGO) and heavy oils. It is suitable for use in petroleum refineries for both process and quality control. It is also suitable for use in thermal power plants for monitoring intake fuel.

## FEATURES

- Energy dispersion X-Ray Fluorescence analyzer (EDXRF) which uses a high performance semiconductor X-ray sensor si (PIN) photo diode.
- Semiconductor sensor features a higher S/N ratio and an excellent stability.
- Compact X-ray does not require special handling procedures associated with radioactive isotope based analyzer. This feature also contributes to enhance safety.
- Explosion proof construction in compliance with IEC Expd, IIB T4.
- Fully automated measurement using a microprocessor based analyzer controller.
- Provides 4~20mA analogue and contact switching alarm outputs.
- Remote controller (Model U-32) version available (option).
- Fluorescent X-ray (using X-ray tube) sulphur content analyzer designed and manufactured in compliance with JIS-K2541 and JIS-B7995.

## STANDARD SPECIFICATIONS

<b>Product Name</b>	: Process Sulphur Analyzer.
<b>Model</b>	: SCA-200, SCA-400.
<b>Measurement Object</b>	: Sulphur concentration of petroleum products such as light gas-oil and heavy oils.
<b>Measurement Method</b>	: Energy dispersion X-ray Fluorescence.
<b>Measurement Window</b>	: Corrosion proof Be coated.
<b>Explosion Proof Standard</b>	: Combination explosion proof (Expd II BT4). Internal pressurised equipment (combined pressurised and flame proof Expd II BT4). Analyzer section (pressurised explosion proof Expd II BT4).
<b>Measurement Range</b>	: 0.01~1 wt % (SCA-200). 0.2~5 wt % (SCA-400).
<b>Measurement Cycle</b>	: Adjustable between 100~999 seconds.
<b>Output</b>	: DC 4~20mA, isolated, max. load 600 $\Omega$ .
Alarm signal	: Analyzer fault. AC125V, 0.4A or DC30V, 2A.
<b>Repeatability (1<math>\sigma</math>)</b>	: 10ppm (SCA-200). 30ppm (SCA-400). Statistics change of S concentration Oppm (900sec. measurement). It's based on concentration.
<b>Reproducibility over 24hrs (1<math>\sigma</math>)</b>	: 15ppm (SCA-200). 45ppm (SCA-400). Statistics change of S concentration Oppm (900sec. measurement). It's based on concentration.



<b>Calibration Curves</b>	: Fundamental, parameter method.
<b>C/H Ratio Error</b>	: $\pm 30$ ppm vs 1C/H.
<b>Sample Conditions</b>	
Temperature	: 120°C or less.
Pressure	: 1MPa (SCA-200) 2MPa (SCA-400)
Supply rate	: 0.3~0.5 L/min.
Moisture content	: 500ppm or less.
<b>Ambient Temperature</b>	: 0~40°C.
<b>Installation</b>	: Protect from rain and direct sunlight.
<b>Paint Colour</b>	: Metallic silver.
<b>Dimensions</b>	: 800W x 400D x 1000H (Analyzer).
<b>Weight</b>	: Approx. 160kg (Analyzer).

## UTILITIES

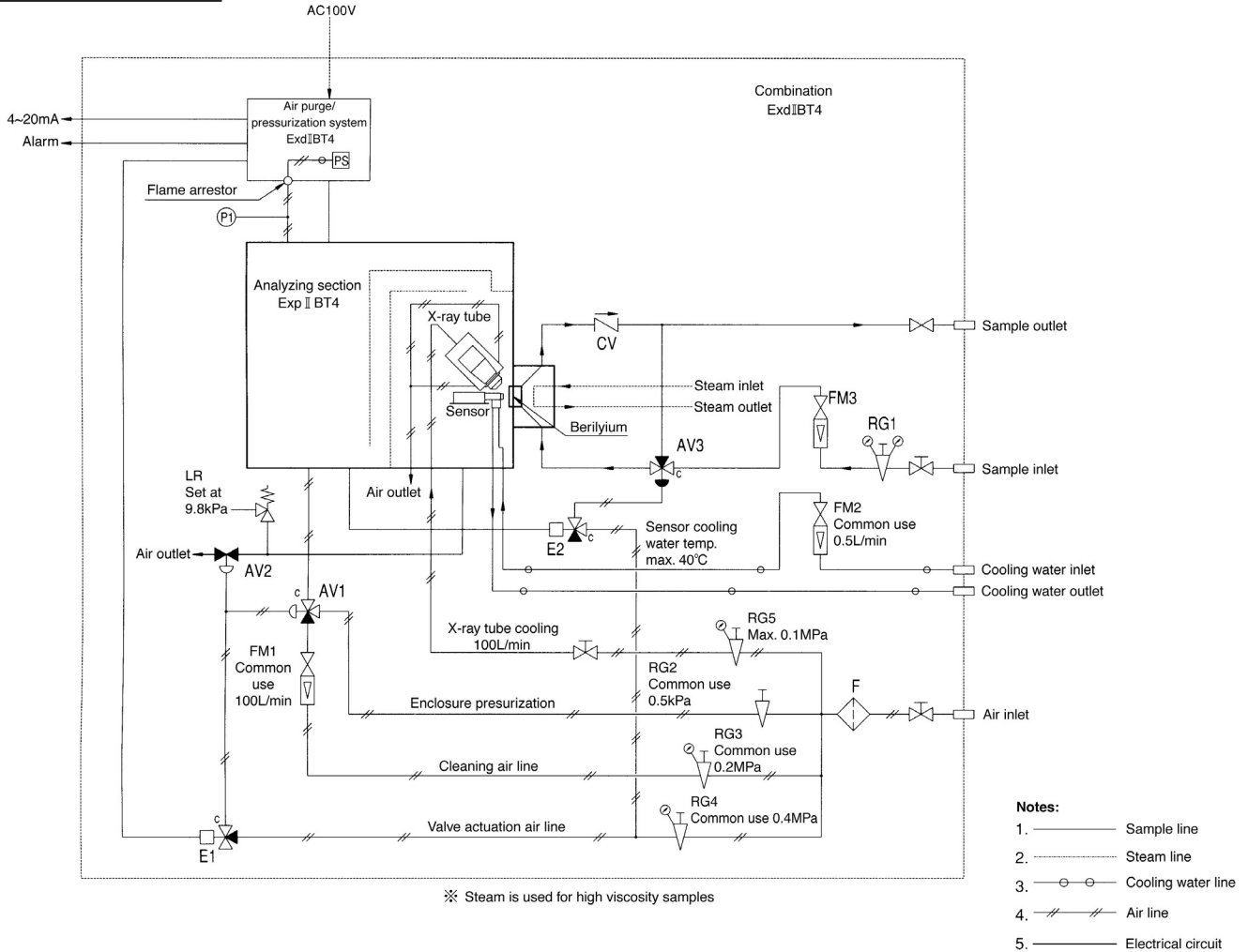
<b>Power Requirements</b>	: AC 100/110/115/200/220/240V $\pm 10\%$ 50/60Hz 300VA.
<b>Instrument Air</b>	: 0.4~0.7MPa, 6Nm <sup>3</sup> /h (Normal). 12Nm <sup>3</sup> /h (Ventilation).
<b>Cooling Water</b>	
Temperature	: 0~30°C.
Flow rate	: 0.5L/min (common use).
Pressure	: 0.1~0.3MPa.

**PRINCIPAL OF OPERATION**

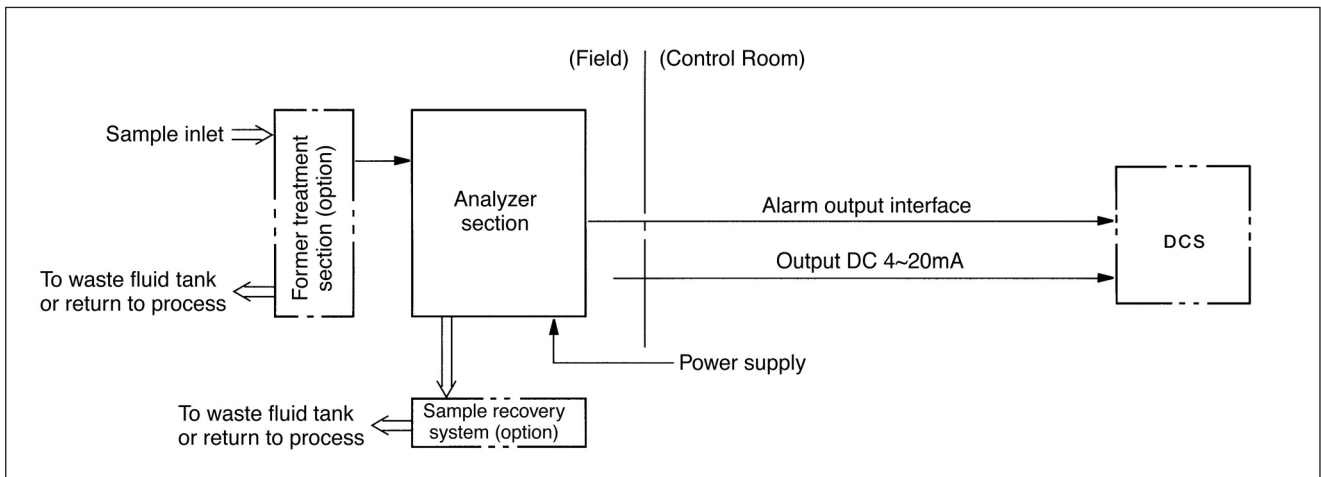
A compact X-ray tube irradiates X-rays onto sample continuously flowing through an analytical cell. Sulphur atoms present in the sample become excited and generate fluorescent X-rays which have energy level characteristics specific only to sulphur. The amount of these specific X-rays generated is proportional to the concentration of sulphur in the sample. The sulphur concentration can therefore be

determined by counting the fluorescent X-rays that are generated with specific sulphur energy levels. At the same time, non-sulphur characteristic X-rays (scattered mainly from carbon atoms) are also counted. The microprocessor controller uses all the data obtained to perform calculations to compensate for error due to C/H and obtains an accurate measure of sulphur concentration in the sample.

**FLOW SCHEMATIC**

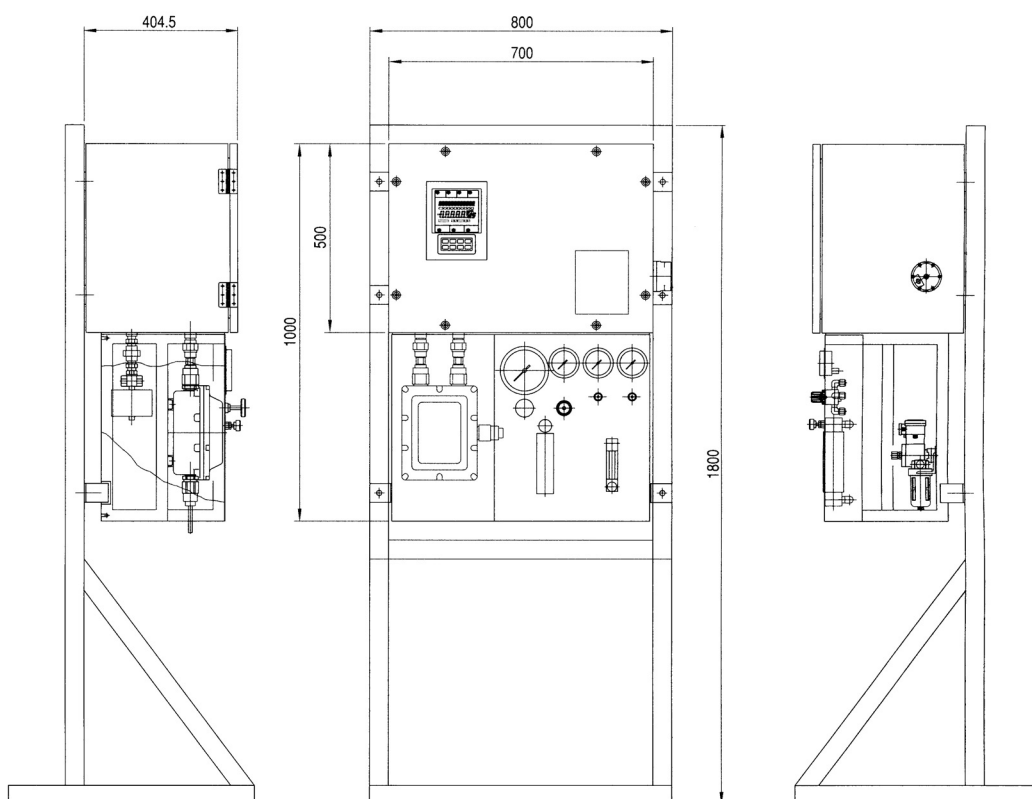


**SYSTEM CONFIGURATION**

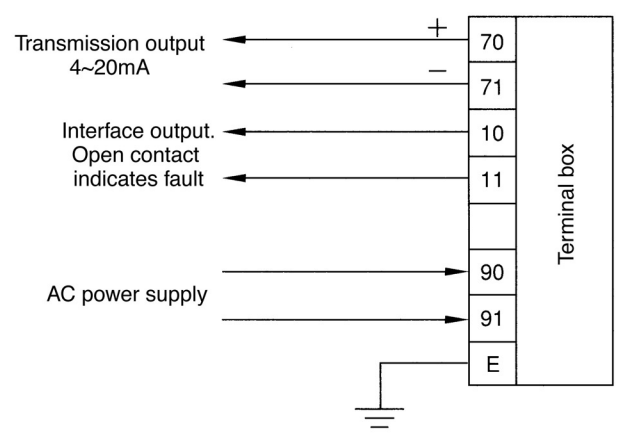


**DIMENSIONS** Units: mm

- Analyzer and Sample Conditioning System



**TERMINAL CONNECTIONS**



**PRODUCT CODE**

SCA  00-

Series	2	Standard (0.01~1Wt%)
	4	For high concentration (0.2~5Wt%)
Power voltage	1	AC 100V 50/60Hz
	2	AC 110V 50/60Hz
	3	AC 115V 50/60Hz
	4	AC 200V 50/60Hz
	5	AC 220V 50/60Hz
	6	AC 240V 50/60Hz
Output	1	4~20mA DC (standard)
Sample pressure	A	0.4~1.0MPa(G) (standard)
	B	0.4MPa(G) or less (in need of sample pump)
	C	1.0MPa(G) or more (in need of relief)
Cooler (sample temperature)	0	Nil
	1	Open cooler (150°C or less)
	2	Panel cooler (200°C or less)
	3	Sealed cooler (300°C or less)
	4	Temperature protect unit
Accumulator (sample pulse)	0	Nil
	1	Standard
Former treatment filter (sludge in sample)	0	Nil
	1	Y type strainer 1 series (1.0MPa(G) or less)
	2	Y type strainer 2 series (1.0MPa(G) or less)
	3	Basket filter 1 series (1.0MPa(G) or less)
	4	Basket filter 2 series (1.0MPa(G) or less)
Coalescer (water in sample)	0	Nil (less than 500ppm)
	A	TOA-DKK's coalescer 1 column (less than 501~1000ppm)
	B	TOA-DKK's coalescer 2 column (less than 2000ppm)
Waste fluid collector (return point pressure)	0	Nil (return pressure atmosphere, free drain)
	1	Waste fluid tank + waste fluid pump air type
	2	Waste fluid tank + waste fluid pump electric type
Former treatment filter (cooling water)	0	Nil
	1	Y type strainer 1 Series (1.0MPa(G) or less)
	2	Y type strainer 2 Series (1.0MPa(G) or less)
	3	Basket filter 1 Series (1.0MPa(G) or less)
	4	Basket filter 2 Series (1.0MPa(G) or less)
Air pressure (Related to AIR drive valve)	A	0.4MPa(G) or more (standard)
	B	0.4MPa(G) or less (in need of multiple pressure valve)
Standard solution tank (for calibration)	0	Nil
	1	Cal. standard tank (10L) + AIR or N <sub>2</sub> press forward
Rack	1	Open rack (P16F) (standard)
	2	Open rack (P16F) roof
Pipe construction	0	0--Nil (standard)
	1	1--Steam trace + insulator
	2	2--Cooling water trace + heat insulator
	3	3--Insulator
	4	4--Heat Insulator
	5	5--High pressure (1.0MPa(G) or more) Scadule 40 or more
	6	6--Seal welding (except screw in connection)

Custom spec. code:  
 Numeric digit: 9  
 Alphabet: Z

**DKK-TOA CORPORATION**



**CAUTION**

Do not operate products before consulting instruction manual.

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