SPECIFICATION SHEET

SS Concentration Analyzer

Model : SSD-1610 (for Low Concentration Measurement)
SSD-1620 (for Medium Concentration Measurement)

SS concentration Analyzer is an optically based measurement instrument for continuously measuring the concentration of suspended solids in sewage, human waste, or industrial wastewater treatment plants or mixed liquor suspended solids in an aeration tank.

There are two types of SS concentration analyzers: low concentration measurement and medium concentration measurement. The former mainly measures the concentration of suspended solids and the latter measures mixed liquor suspended solids.
(MLSS: Mixed Liquor Suspended Solid)

Immersion type detector

Features

○Compact immersible piston detector design

The detector has an optical cylinder cell with a wiper that is moved up and down slowly by a small DC motor, allowing sample water to be suctioned and discharged while cleaning the cell window, for long-term stable measurement.

○Wide measurement range

There are three manually selectable ranges: 0 - 30/500/1000mg/L for low concentration measurement and 0 - 5000/10000/20000mg/L for medium concentration measurement.

○Less susceptible to external light

The detector is almost unsusceptible to external light, because blank measurement is always performed by turning off the light source to correct the calculation.

○Different types of detectors available to support various applications

There are three types of detectors available: a 1.0 to 2.5m immersion-type detector, a small, light-weight Drop-in-type detector designed for use in a 2 to 6m long protection pipe, and a pipe insertion-type detector designed to be directly inserted into a pressurized pipe.

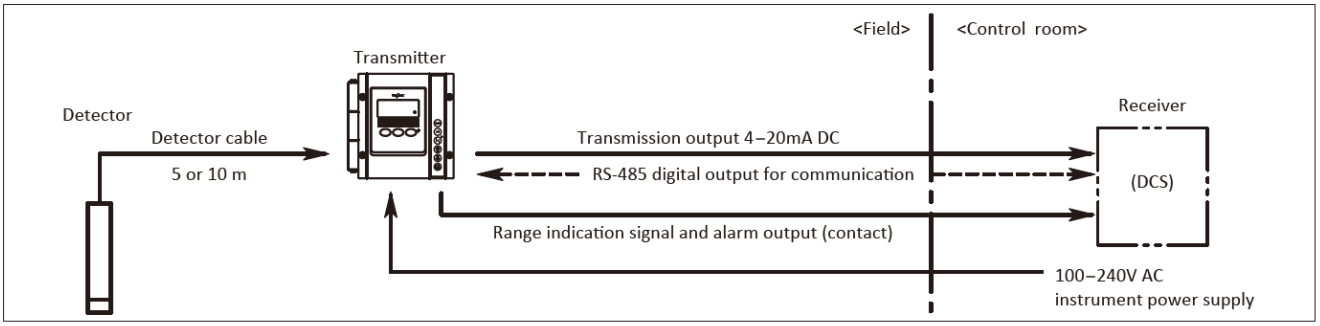
○Long-life optical system

The optical system consists of a set of high-intensity infrared LEDs and photodiodes, and provides high reliability and long life.

○RS-485 (standard) digital signal

Supports Modbus communication.

Configuration



Standard Specifications

Model	Measurement method	Measurement cell	Measurement range	Transmission output range	Major application
SS concentration analyzer (for low concentration measurement) SSD-1610	Transmitted and scattered light comparison	Cylindrical glass cell, ø1/2 inch	0 - 1000 mg/L	Three manually selected ranges (0 - 30/500/1000 mg/L, (The range can be set in steps of 1 mg/L from 30 to 1000 mg/L.)	Water from treated primary settled wastewater, inflow wastewater, clear water in sludge concentration tanks, and industrial wastewater
SS concentration analyzer (for medium concentration measurement) SSD-1620	Transmitted light measurement	Cylindrical glass cell, ø1/4 inch	0 - 20000 mg/L	Three manually selected ranges (0 - 5000/10000/20000 mg/L, (The range can be set in steps of 10 mg/L from 3000 to 20000 mg/L.)	Mixed liquid in an aeration tank, return sludge, and surplus sludge

● Transmitter

Installation : On-site installation
50A pipe or wall/rack mount
Enclosure : IP65 (dust-protected, water jet-protected)
Material and finish : Die-cast aluminum, polyester resin
Coating color : Metallic silver
Display : Digital LCD display
Measurement (or cleaning) cycle interval : Approx. 30 seconds (15 - 999 seconds selectable)
Because it takes approx.15 seconds for the one batch for measurement during measurement (cleaning) cycle, the measurement value will be renewed every 15 seconds if the cycle is set at 15 seconds.
In case of 30 seconds of the interval by factory setting, the measurement will be repeated at every 15 seconds being intermittent with 15 seconds of waiting time between.
Transmission output : 4 - 20 mA DC, insulated
Load resistance...600Ω or less
Communication : RS-485 (insulated)
Protocol.....Modbus/RTU
Data length...8 bits
Baud rate.....Select from 1200/2400/4800/9600/19200/38400/57600 bps.
Parity...Select from NONE/ODD/EVEN.
Stop bits.....1 bit
Data orde.....BIG ENDIAN
Contact output : 6 circuit-make contacts (contact "a")
Power-Off, Ranges, Under Maintenance, Analyzer Fault,
Contact capacity...30V DC, 0.1A (resistive load)
Operation switch : Waterproof touch keys (7)
Operating power : 100 - 240V AC ±10% 50/60Hz
Power consumption : Approx. 10VA (15VA maximum)
Cable ports : G1/2 x 6 (grounded for ø6 - 12 cable)
Ambient temperature /humidity : -10 - 50°C
95% RH or lower (non-condensing)
Weight : Approx. 2kg

● Detector

Installation : Immersion type .....1.0 - 2.5m long
Drop-in typ...2 - 6m protection pipe used
Pipe insertion type..0.6m
(Special installation device available for each type)
Materials : Enclosure.....SUS316/rigid PVC
Measurement cel.....Pyrex glass
Wiper.....Urethane rubber
Detector cable.....PVC
Extension pipe for immersion type SUS316
Protection pipe for tube type...SUS304/SUS316
Outside dimension : ø50.8 (basic length; 650mm)
Cell cleaning : The inside of the measurement cell is automatically cleaned while suctioning or discharging sample water with the wiper.
Wiper drive : Compact DC motor and slide mechanism
Vertical travel time..Approx. 15 seconds
Detector cable length : 5 or 10m
Sample water requirements : Pressure...Ambient pressure for immersion and protective tube types (maximum water depth ; 6.3m)
0.2 MPa or lower for pipe insertion type
Temperature...0 - 50 °C
Velocity of flow...1 m/sec or less
Weight : Body length 0.6m / Insertion type ..Approx. 3kg
Immersion type 1.0 - 2.5m...Approx. 4 - 7kg
Drop-in type 2 - 6m...Approx. 5 - 15kg

Performance

Repeatability : ±2% FS (by the supplied check bar)
Zero drift : ±2% FS/week (based on simulated input)
Span drift : ±2% FS/week (based on simulated input)
Responsiveness : 90% response can be set in steps of one minute from one minute to 60minutes.
Warm-up time : Approx. 5minutes

For the factory settings, the supplied check bar value is a Formazin value for low concentration measurement, and a value based on Class 5 fly ash (as specified in JIS Z 8901-2006 "test powder and test particles") for the medium concentration measurement.

Calibration

(1) Analysis data-based calibration

After installing the instrument, perform SS analysis (weight method) for as many samples as possible. Prepare a calibration curve by comparing the analysis data with the instrument readings and calibrate the instrument based on the calibration curve.

(2) Check bar-based calibration

After calibration with analysis data, measure against the supplied check bar and record the indicated values. After this, calibration of the instrument is performed with the check bar.

Principle of Measurement

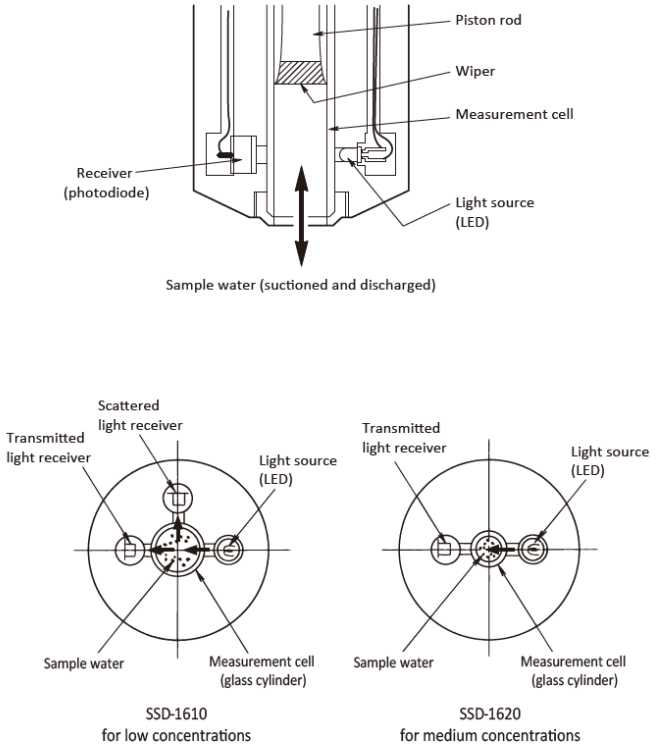
Sample water without SS particles is transparent, but sample water with SS particles is opaque. Because the opacity (or the number of particles) is proportional to the SS concentration, it is possible to determine the SS concentration by illuminating the sample water with light and measuring a change in the light intensity. (SS : Suspended Solid)

The Model SSD-1610 for low concentration (SS : 1000 mg/L or less) measures and compares scattered and transmitted light and converts the comparison result into a more accurate SS concentration value.

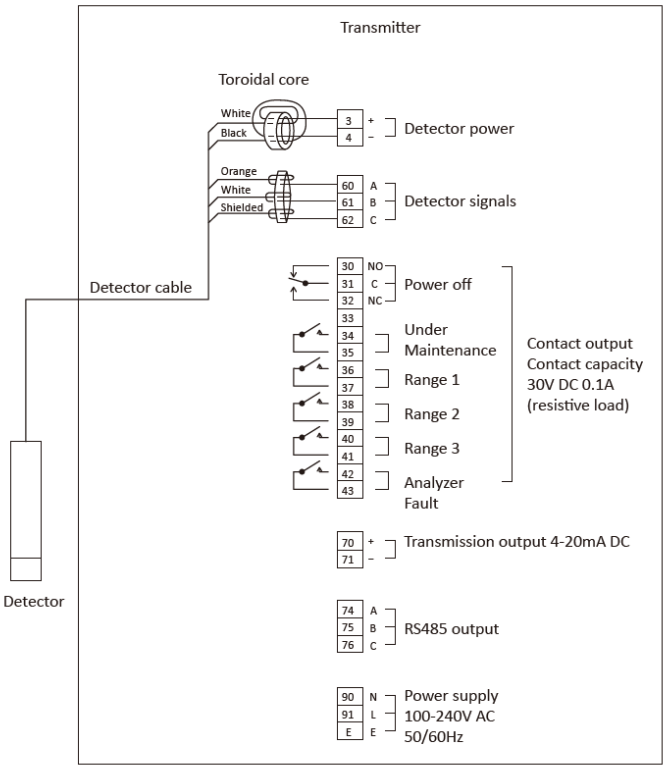
The Model SSD-1620 for medium concentration (SS : 5000 - 20000 mg/L) measures only transmitted light and converts the result into a SS concentration value.

The light source LED, measurement cell, and transmitted light (and scattered light) receivers are arranged as shown in the figure on the right. The wiper continuously moves vertically in the cylindrical measurement cell. When the wiper moves up, sample water is suctioned into the measurement cell for measuring the amount of light. When the wiper moves down, the sample water is discharged. The wiper also serves to clean the inside of the measurement cell (cell window).

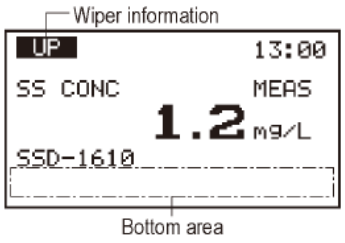
Detector assembly structure



Terminal Connection



Measurement display

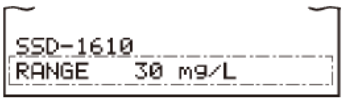


- Measured value: SS value
- Wiper status: UP or DOWN (rough wiper position information)
- Information shown at the bottom

(Each time the [READ] key is pressed, the measurement range is displayed:)

READ 30 mg/L : Range 1
500 mg/L : Range 2
1000 mg/L : Range 3

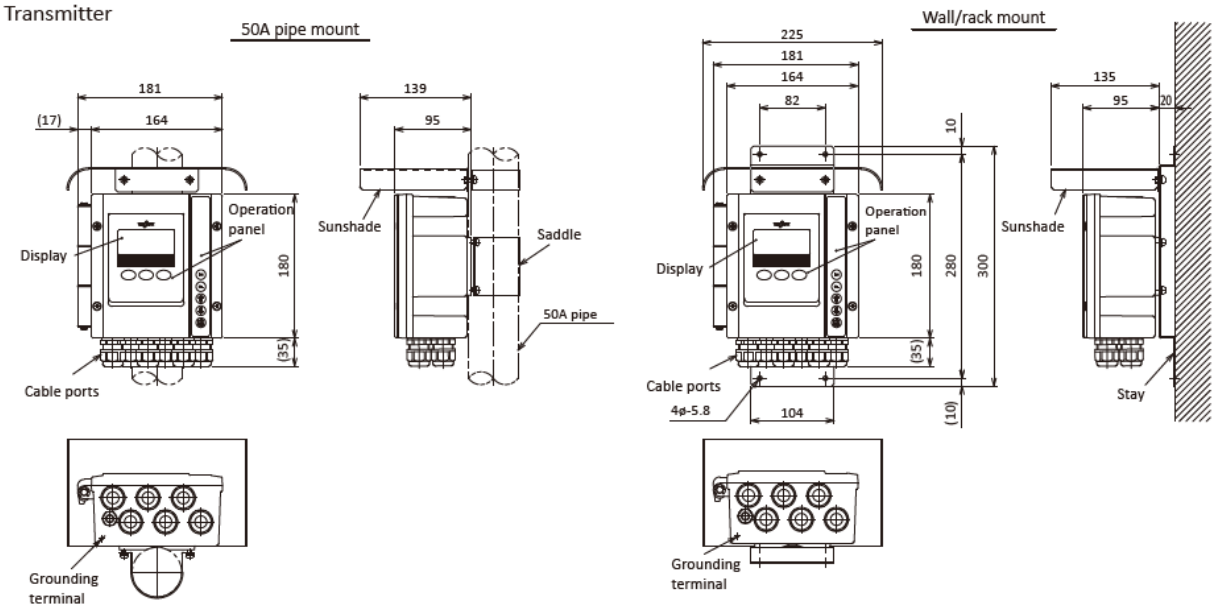
Currently selected range is displayed by pressing the [READ] key.



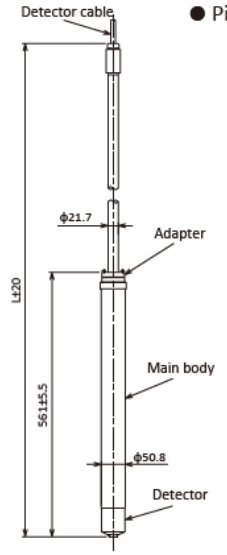
Dimensions

Unit : mm

● Transmitter

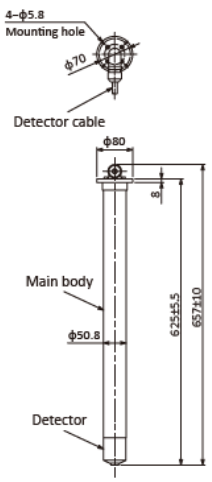


● Immersion type detector

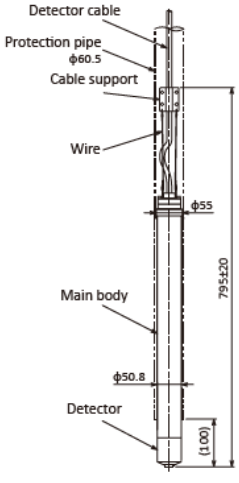


L=1m, 1.5m, 2m, 2.5m

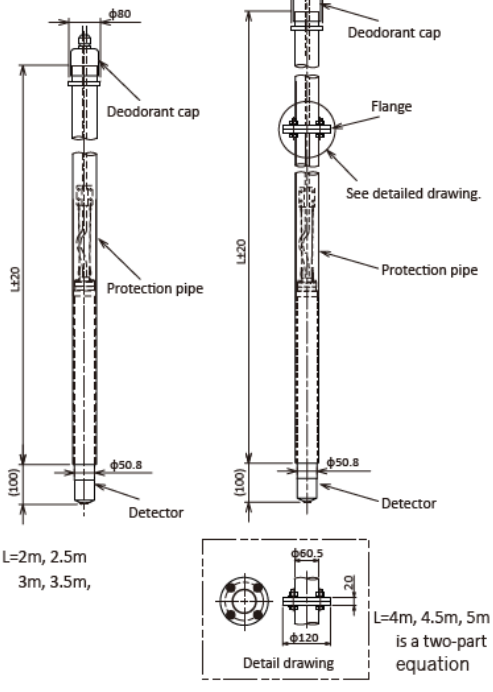
● Pipe insertion type detector



● Drop-in type detector



● Drop-in protective tube

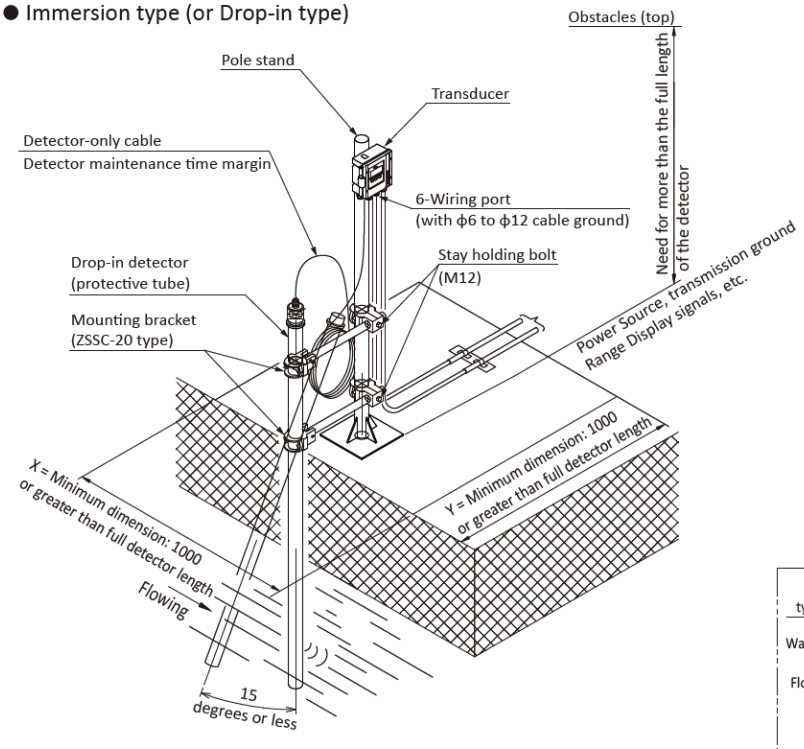


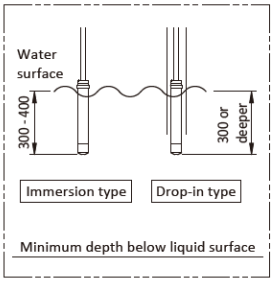
L=2m, 2.5m
3m, 3.5m,

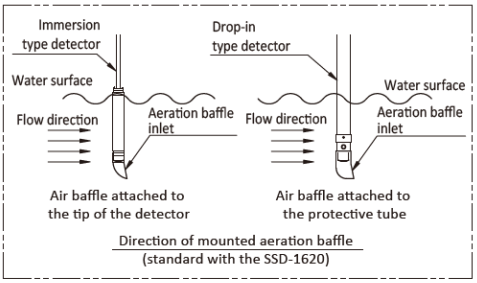
L=4m, 4.5m, 5m ,6m is a two-part equation

Installation Example

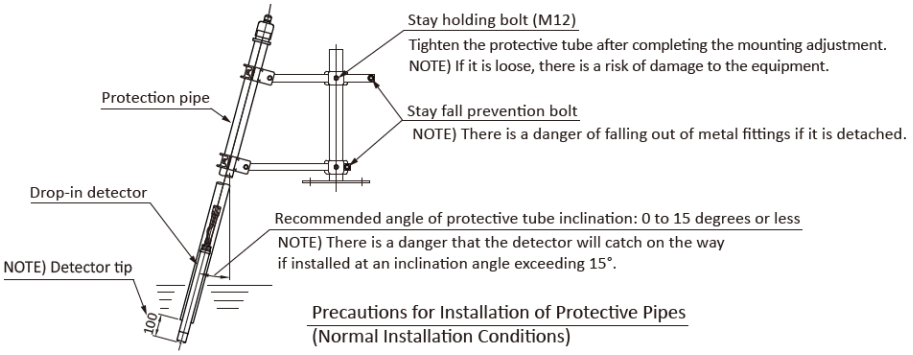
● Immersion type (or Drop-in type)







● Pipe insertion type



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DKK-TOA CORPORATION

⚠ CAUTION Please read the operation manual carefully before using producuts.

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