

SuSix[®] Turbidity and Suspended Solids Transmitter



General



MJK SuSix® turbidity and suspended solids sensors are designed for measurement by immersing the sensor into open tanks, wells and containers or in-line pipe mounting.

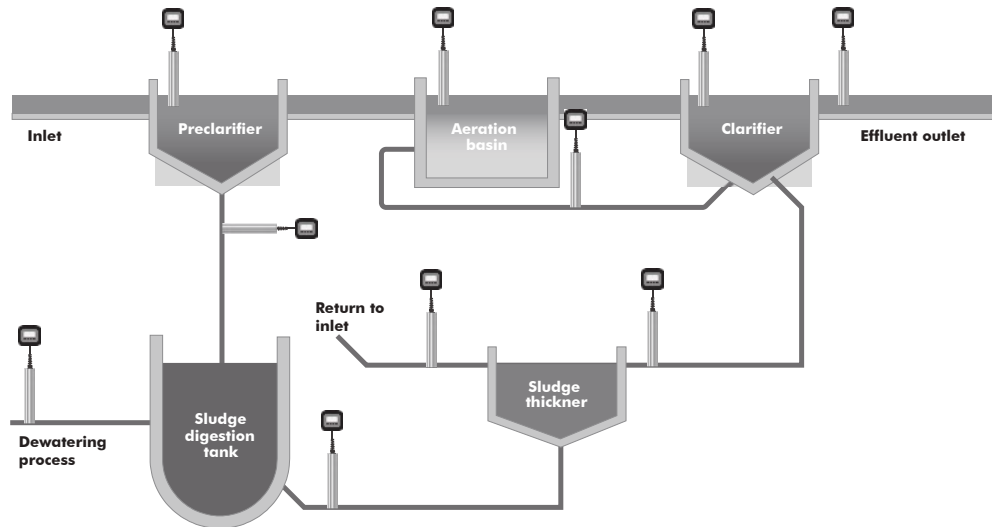
The SuSix® transmitter is rugged and designed to handle tough applications.

The scratch-proof sapphire optics, the PUR cable and the heavy duty sensor housing ensure long life, even where scaling and bio-fouling are problems.

Applications

- Sewage and wastewater plants
- Drinking water
- Biologic control
- Sludge treatment
- Filtering stations
- Groundwater pump stations

Application examples for measuring with SuSix® on a wastewater plant.



One Sensor - Full Range

The sensor provides a full range from 0.001 to 9999 FNU/NTU for turbidity and 0.001 to 400 g/l (SiO₂) for suspended solids measurements. The turbidity measurement complies with ISO 7027.

The SuSix® is equipped with beam forming optics for multi-angle detection of turbidity and suspended solids. This advanced optical system is combined with a progressive algorithm using neural logic to generate a reliable high quality measurement.

The sensor compensates for errors due to fouling or aging of the optical array and compensates for gas bubbles in the sample.



Calibration

The SuSix® sensor is provided with factory calibration for turbidity, and zero point factory calibration for suspended solids.

A single point in-situ calibration can be conducted for many applications. For more rigorous or difficult applications a two- or three-point calibration is also possible.

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High Quality Materials

The SuSix[®] sensor is constructed of stainless steel with chromium-dioxide coating and scratch resistant sapphire lenses in a highly polished stainless steel sensor face.

An optional self-cleaning wiper system is available for particularly dirty and difficult applications.

Flexible Installation

MJK's modular design allows up to 300 meters (950ft.) between the sensor and the converter, and the Display Unit can be mounted up to 1000 m (3000 ft.) from the signal converter with ordinary twisted wires.

One Display Unit can control up to four Mag-Flux[®] converters and/or SuSix[®] signal converters for greater economy, space savings and an improved overview of the multiple measurement values.

Simple to Operate

The SuSix[®] Display Unit has a mobile phone-like menu structure and can display text in several selectable languages.

PC Connection

SuSix[®] allows downloading setup configurations, uploading new instrument software updates and display customization. The onboard data logger captures 20,000 readings which are displayed as an electronic graph and can be retrieved as a CSV file on a PC. This connectivity is achieved with a common USB port and the free MJK Field Link software.

Flexible In- and Outputs

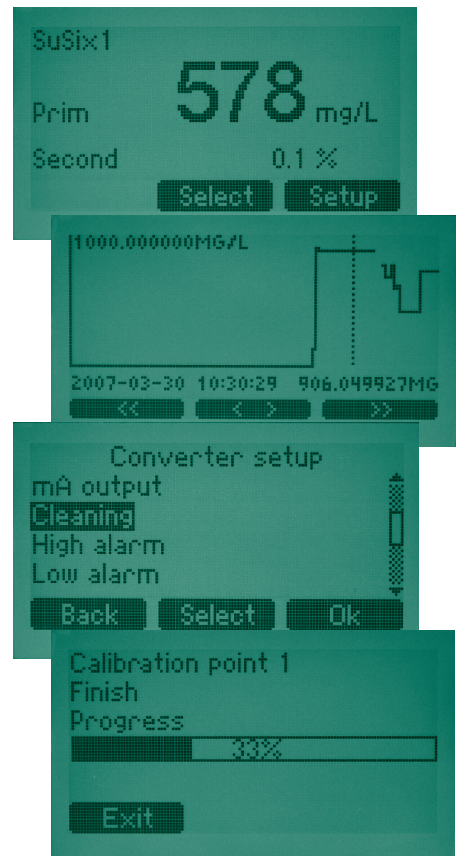
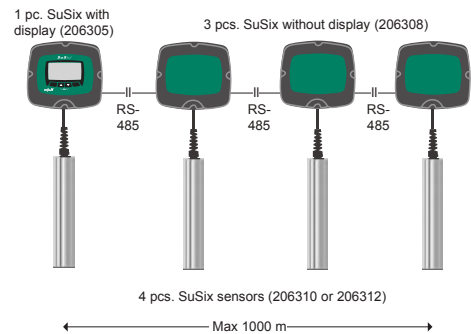
The SuSix[®] converter has one 4-20 mA analogue output, two digital outputs for alarms or control, and one digital input for resetting alarms, batches, etc.

User-definable Text

Up to five lines of text and readings can be configured by the user. The graphic display is automatically adjusted to show the largest characters possible. Alarms can be displayed as pop-up alarms until they are reset.

Modbus[®] Communication

The Display Unit uses the Modbus[®] RTU communication protocol to connect to the SuSix[®] Converter. The converter can in turn connect to SCADA systems with its Modbus[®] communication protocol. Register lists are available upon request by our customers.



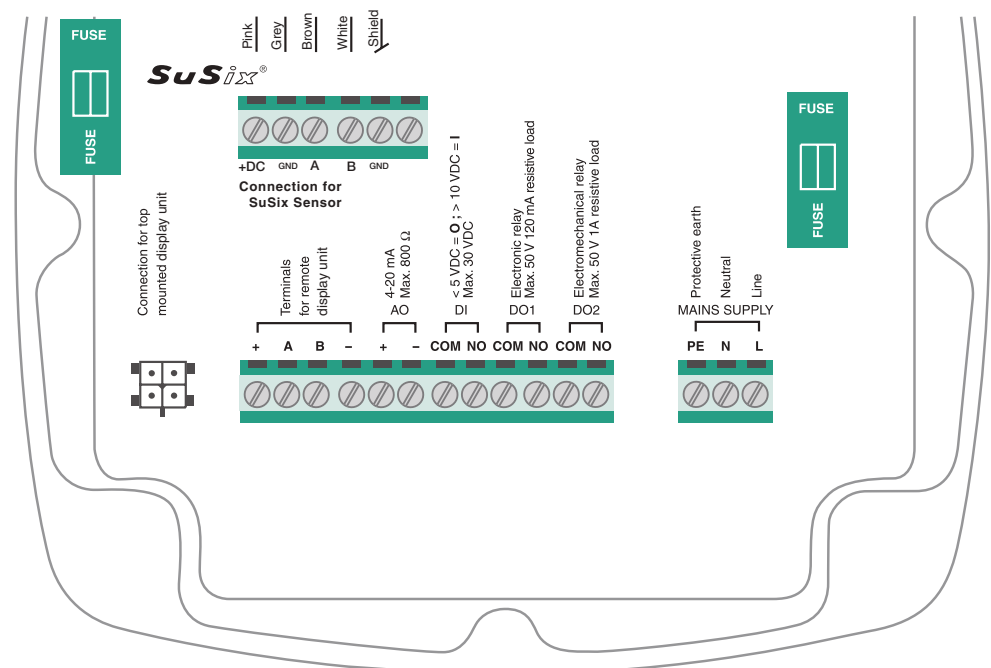
Specifications

Converter and Display Unit

Converter	
Accuracy	+/- 0,1% of reading
Measuring input	RS 485
Analog output	One active 4 - 20 mA, galvanically isolated (max. load 800 Ω)
Digital outputs	One voltage-free electromechanical relay (max. 50 V DC / 1 A) One optically isolated MOSFET relay (max. 50 VAC / V DC / 120 mA)
Digital inputs	One, max. 30 V DC, < 5 V DC = 0 (low), > 10 V DC = 1 (high), pulse length > 100 ms
Communication	MODBUS® RTU-mode, 9600 baud, 2-wire RS 485, slave-mode
Interface	RS 485 for connection to Display Unit or PLC
Power supply	24 V AC, 50 / 60 Hz ± 10 % or 115 V AC, 50 / 60 Hz ± 10 % or 230 V AC, 50 / 60 Hz ± 10 % Power consumption max. 10 W
Cabinet material	Polycarbonate, glass reinforced
Enclosure rating	IP 67, NEMA 6
Temperature range	- 20 ... 60 °C
Weight	1,1 kg
CE approvals	EN 61000-6-4:2001, EN 61000-6-2:2001

Display Unit	
Enclosure rating	Dust and waterproof IP 67, NEMA 6 (when mounted on Converter)
Housing material	Polycarbonate, glass reinforced
Protection lid	Transparent polycarbonate
Display	White backlit LCD-display (64 x 128 pixels) with softkeys
Indication	Indication measurement, configuration and graph
Clock	Real-time clock with built-in battery backup
Communication	MODBUS® RTU-mode, 9600 baud, 2-wire RS 485, master-mode
Interface	RS 485
Memory	256 Kb Flash memory, 20.000 entries with date, time and value
Interface	USB 1,1 type mini B, Female
Temperature range	- 20 ... 60 °C

Electrical Connections on the Converter



Specifications

Sensor

SuSix [®] Sensor	
Turbidity	0.001 - 9999 FNU/NTU ¹⁾
Suspended solids	0.001 - 400 g/l (SiO ₂)
Measurement principle	Infrared-diode system and beam focusing (λ = 860 nm)
Turbidity	Two-channel-90° scattered light measuring corresponding to DIN/EN 27027/ISO7027 Additional verification by six-channel multi-angle measuring
Suspended solids	Six-channel, multi-angle with modified absorption 2 channels are used for absorption
Materials	Head: Stainless steel DIN 1.4460 — Body: Stainless steel DIN 1.4435 Optical lenses: Sapphire — O-ring: Viton Wiper (optional): PA (GF), TPU — Cable: PUR
Cable	3 x 2 x 0.34 mm ² , outer diameter Ø 8.3 mm
Cable length	10 m (customized lengths, optional ²⁾)
Response time	1 second
Flow velocity	No limit
Power supply	24 V DC (15-30 V DC)
Current consumption	Approx. 45 mA
Output	RS 485, 9600 baud, 2-wire
Accuracy (turbidity)	Better than 3% of actual concentration
Accuracy (susp. solids)	Better than 5% of actual concentration (depends on calibration and media)
Temperature range	0 - 60 °C — short term to 80 °C — with wiper 0 to 50 °C
Enclosure rating	IP 68 to IEC 529 (10 m) / 10 bar pipe mounted, NEMA 6x
Weight	1,3 kg
Approvals	CE: EN61010-1, EN61326-1 — ATEX: Ex II 3G

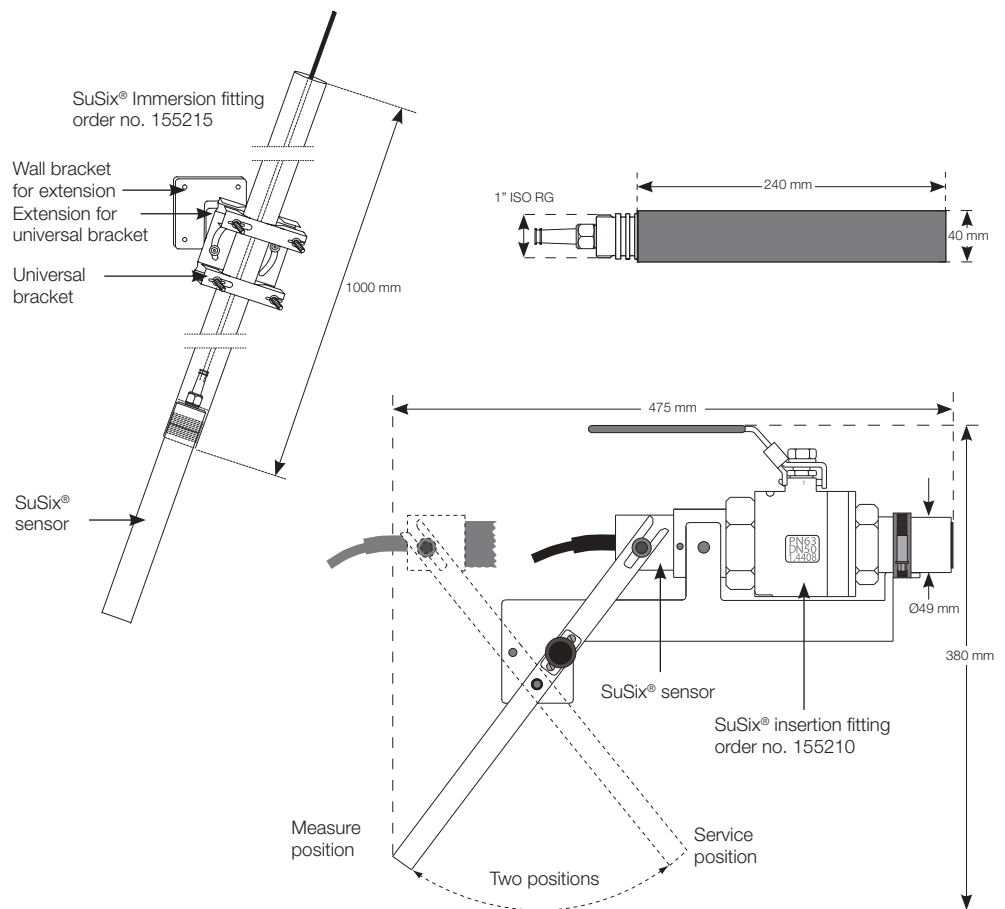
¹⁾ 4000 upwards FNU internal manufacturer norm.
²⁾ Can be delivered with other cable lengths on request.

Mechanical Dimensions

Immersion Fitting

Sensor

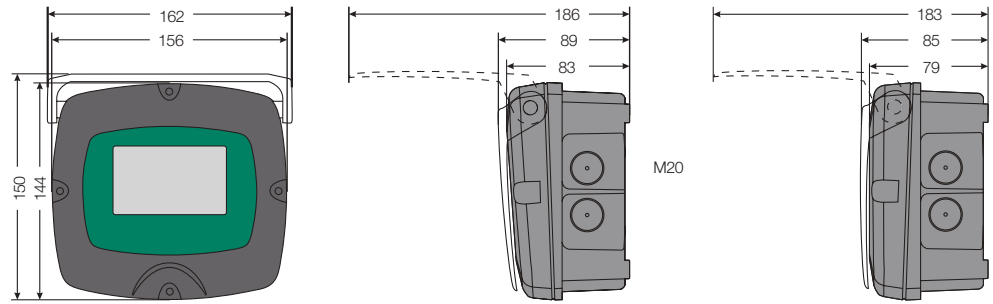
Insertion Fitting



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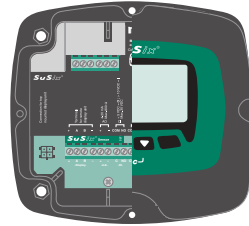
Mechanical Dimensions

Converter and Display Unit

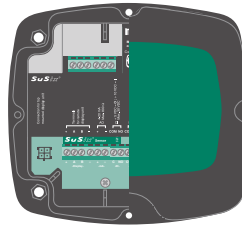


Order Numbers

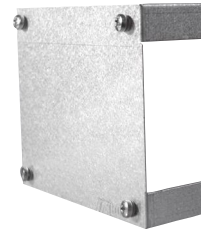
SuSix® Converter, Displays, Sensors and Accessories



206305, SuSix® Converter with display



207930, Wall Mounting Kit



207935, Panel Mounting Bracket



Converter mounted in a panel

SuSix® Converters

206304	SuSix® Converter w/ display, 10 - 30 V DC
206305	SuSix® Converter w/ display, 115 / 230 V AC
206306	SuSix® Converter w/ display, 24 V AC
206307	SuSix® Converter without display, 10 - 30 V DC
206308	SuSix® Converter without display, 115 / 230 V AC
206309	SuSix® Converter without display, 24 V AC
207930	Wall mounting kit / Junction box for sensor cable
207935	Panel mounting bracket

SuSix® Sensors

206310	SuSix® Sensor
206312	SuSix® Sensor w/ wiper

Accessories for SuSix® Sensors

206350	Wiper kit (5 pcs.)
206355	Wiper repair kit
206360	Gasket pulling/insertion tool
691120	Cable for SuSix® sensor (PUR)

Fittings for SuSix® Sensors

155210	SuSix® Insertion fitting
155215	SuSix® Immersion fitting

Accessories for SuSix® Sensor Fittings

200205	Universal bracket
200210	Wall bracket for extension
200215	Extension for universal bracket