

# SuSix®

## TURBIDITY AND SUSPENDED SOLIDS TRANSMITTER

### In 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 optics, the PUR cable and the heavy duty sensor housing ensure long life, even where scaling and biofouling are issues.

SuSix® is equipped with infrared 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 is factory calibrated and made of chromium dioxide coated stainless steel and scratch resistant sapphire lenses

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

It has a large graphical display and a user interface showing current measurement values. The user-friendly menu system - in several languages - along with softkeys for operation, makes it very easy to program and manage.

The display unit's large built-in data logger can contain 365,000 timestamped logs. By activating a single button, an overview of the local operator's logs is easily retrieved and displayed in a trend curve on the display.

### Features

- One sensor - full range
- High quality materials
- PC connection
- Flexible installation
- Flexible in- and outputs
- Modbus® communication

### Applications

- Sewage & wastewater plants
- Drinking water
- Biologic control & sludge treatment
- Filtering stations
- Groundwater pump stations

### DATASHEET

EN 5.1 SUSIX DATASHEET 2007



## Specifications

SuSix® Converter	
Accuracy	+/- 0,1% of reading
Measuring input	RS-485
Analog output	One active 4-20 mA, galvanically isolated (max. 800 Ω)
Digital output	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
Approvals	EN 61000-6-4:2001, EN 61000-6-2:2001
SuSix® Display	
Display	Graphic background-lit LCD-display (64 x 128 pixels) with soft keys
Display indication	Indication of measurement, configuration and graph
Power supply	From Susix® Converter
Clock	Real-time clock with built-in lithium battery (lifetime 10years@ 20° C)
Communication	MODBUS® RTU-mode, 9600 baud, 2-wire RS 485, master-mode
Interface	One pcs. RS-485 Modbus® RTU-mode One pcs. USB 1,1 type mini B, female One pcs. for communications module
Memory	Flash memory, 345.000 loggings incl. date, time and value (curve display)
Enclosure rating	IP 67, NEMA 6
Material	Housing: Glass-reinforced polycarbonate Protection lid: Transparent polycarbonate
Temperature range	- 20 ... 60 °C / - 5 ... 150°F
Operating relative humidity	Max. 85% noncondensing
Weight	0,5 kg / 1.1lb
SuSix® Sensor	
Turbidity measurement range	0.001 - 9999 FNU/NTU <sup>1)</sup>
Suspended solids meas. range	0.001 - 400 g/l (SiO <sub>2</sub> )
Measurement principle	Infrared-diode system and beam focusing (l = 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 Optical lenses: Sapphire Wiper (optional): PA (GF), TPU – Body: Stainless steel DIN 1.4435 – O-ring: Viton – Cable: PUR
Cable	3 x 2 x 0,34 mm <sup>2</sup> , outer diameter Ø8.3 mm
Cable length	10 m, customized lengths <sup>2)</sup>
Response time	1 second
Flow velocity	No limit
Power supply	24 V DC (15-30 V DC)
Current consumption	App. 45 mA
Output	RS 485, 9600 baud, 2-wire
Accuracy (turbidity)	Better than 3% of actual concentration
Accuracy (suspended 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, 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 FNU internal manufacturer norm.

2) Can be delivered with other cable lengths on request.

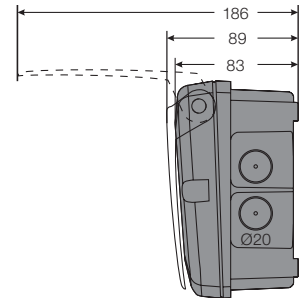
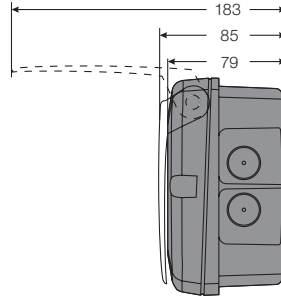
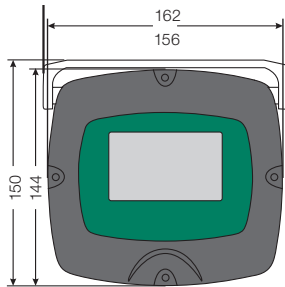
## Electrical connections

Sensor	
1. Pink	+DC
2. Gray	DC GND
3. Brown	RS 485 A
4. White	RS 485 B
5. Shield	Shield GND

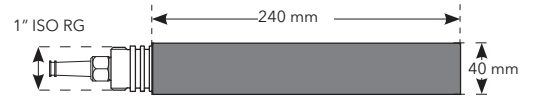


## Dimensions

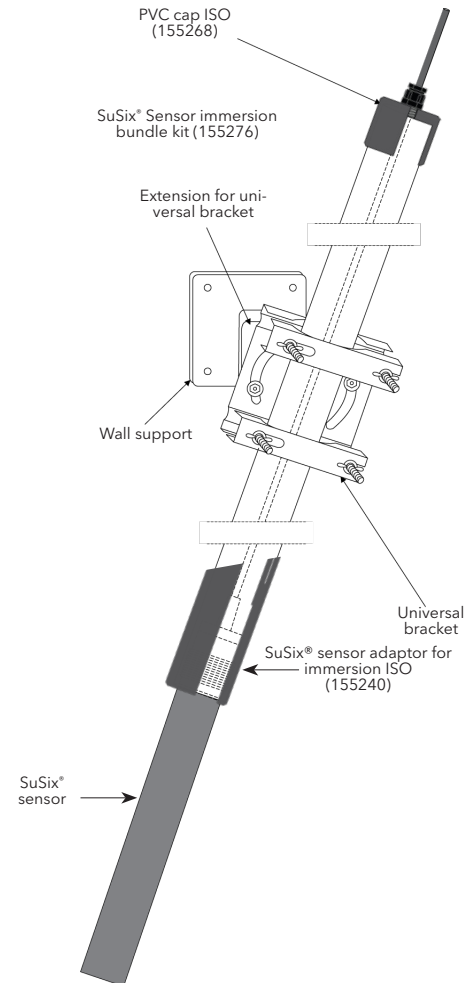
### Converter and display unit



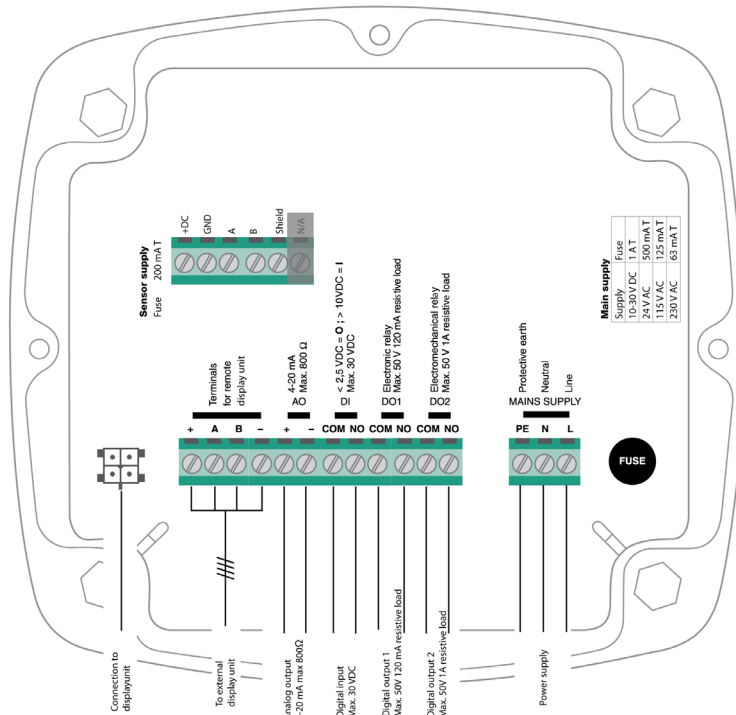
### Sensor



### Immersion fittings



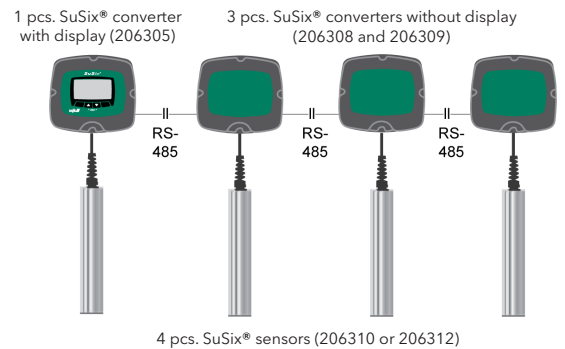
Electrical mounting



Interconnectivity

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.

For greater economy, space savings and an improved overview of multiple measurement values, one display unit can control up to four Oxix® DO transmitters, MagFlux® flow meters and/or SuSix® transmitters.



Accessories

Turbidity Test Unit

MJK SuSix® Turbidity Test Unit can be used to verify turbidity readouts from SuSix® Turbidity and Suspended Solids Sensors and is meant for dry use.

The SuSix® Turbidity Test Unit is ideal for verification, evaluation and check of stability of a SuSix® sensor's calibration.

The measurement is based on reflection/absorption from a special glass formulation at the bottom of the test unit. This special glass formulation reacts like formazin, but unlike other calibration systems it simulates approximately 1 NTU/FTU - close to the value for a final water calibration. It is nearly impossible to manufacture a formazin solution with any stability at these levels, making the SuSix® test unit unique and extremely user friendly - and finally, it requires no special maintenance.



SuSix® Turbidity Test Unit p/n (206370)



SuSix® sensor p/n (206310 or 206312)

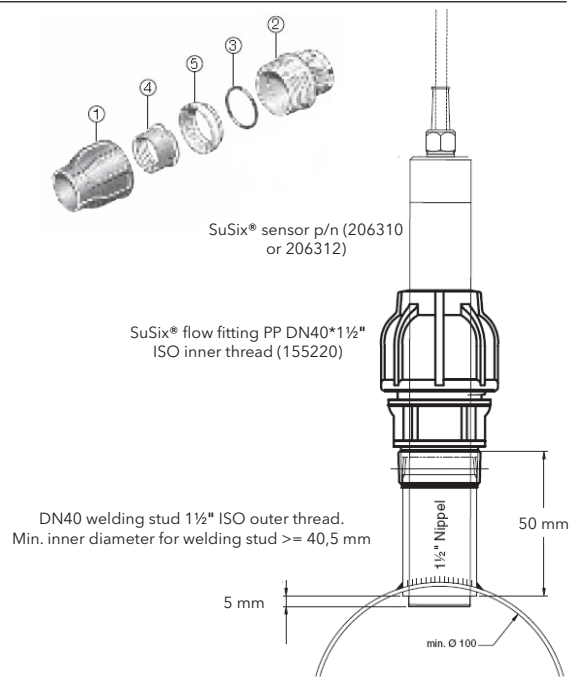
SuSix® Turbidity Test Unit p/n (206370)

Specifications	
Materials	ABS, PVC, glass
Weight	555 grams
Dimensions	w x h: 110 x 110 mm

Accessories (cont.)

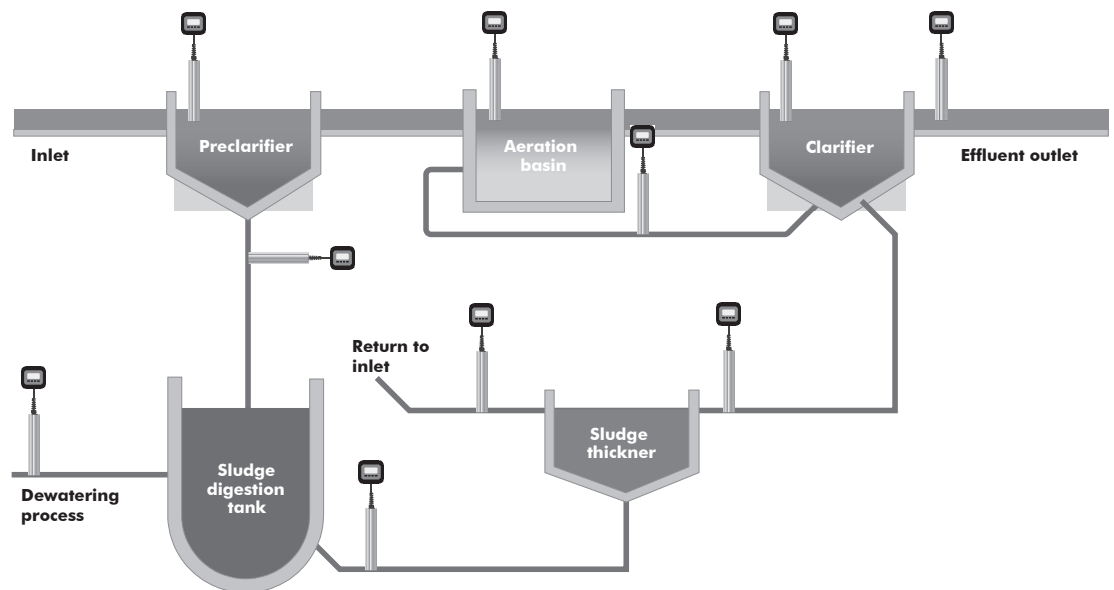
Flow fitting PP  
In-line PP flow fitting for SuSix® sensor.

Specifications	
Materials	1 Lock ring PP copolymer
	2 House PP copolymer
	3 O ring NBR
	4 Clamp ring POM
	5 Compressions ring PP



Application areas

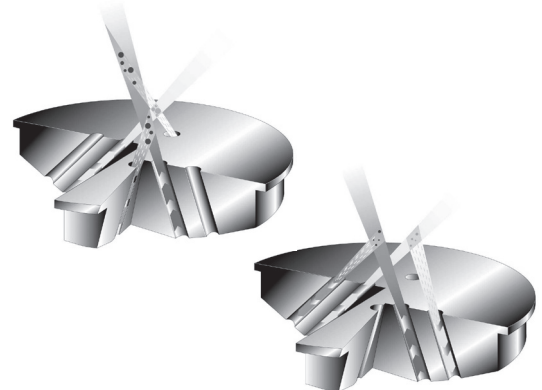
Application examples for measuring with SuSix®: Sewage and wastewater plants, drinking water, biologic control, sludge treatment, filtering stations and groundwater pump stations. Furthermore, below is indicated possible usage of SuSix® on a wastewater plant.



One sensor - full range

The sensor provides full range from 0.001 to 9999 FNU/NTU for turbidity and 0.001 to 400 g/l (SiO<sub>2</sub>) 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.



## Order numbers

SuSix® Converters	
206304	Susix®/Oxix® Converter w/ display 10-30VDC
206305	Susix®/Oxix® Converter w/ display 230/115VAC
206306	Susix®/Oxix® Converter w/ display 24VAC
206307	Susix®/Oxix® Converter w/o display 10-30VDC
206308	Susix®/Oxix® Converter w/o display 230/115VAC
206309	SuSix®/Oxix® Converter w/o display 24VAC

Turbidity and suspended solids sensors/SuSix® Sensors	
206310	SuSix® sensor w/ 10m cable, w/o wiper
206312	SuSix® sensor w/ 10m cable, w/ wiper

## Order numbers Accessories

Fittings and accessories for SuSix® Sensors	
155220	Susix® flow fitting PP DN40/1½"
155240	SuSix® sensor adaptor for immersion ISO
155252	SuSix® adaptor for Ball float ISO
155260	PVC pipe 50mm - PN10 (ø50 x 2,4mm) per meter
155268	PVC CAP ISO 50mm w. PG9 Cable Glans
155276	Sensor immersion bundle kit for Susix® Sensor ISO consisting of: 155240, 155268, 579055, 200205, 200210, 200215
206350	Wiper maintenance kit 1 pc. for Susix® Sensor, from sn 51500
206370	Susix® Test Unit for Turbidity

Accessories for SuSix® Sensorer	
109113	MJK product test certifikat. Must be requested upon order!
200205	Universal bracket
200206	Hinged mounting for pipe ø45mm-55mm for universal bracket
200210	Wall support for universal bracket
200215	Extension for universal bracket
205546	Modbus and RS 485 communications module
205547	Profibus DP communication module
207930	Wall mounting kit for Magflux®, SuSix® and Oxix®
207935	Panel Mounting Bracket for MagFlux®, SuSix® and Oxix®
207940	Display Unit for MagFlux®, SuSix®, Oxix®
500220	Cover for Field Cabinet (small) transparent
500221	Cover for Field Cabinet (small) Opaque
579055	PVC glue bottle with 120 gram
691075	Communication cable 2X2X0,5mm2 (AWG20) Shielded twisted pair
691095	PC Mini USB/USB Cable
691098	USB mini/USB mini, plug for cabinet 0,2m cable
807021	Connection board for MagFlux®, SuSix®, Oxix®
840110	MJK Field-Link