



Applications

- Filtration checking and control
- Monitoring of crystallization processes
- Measurement and control of defined turbidity levels

In processes in the food, chemical and pharmaceuticals industries

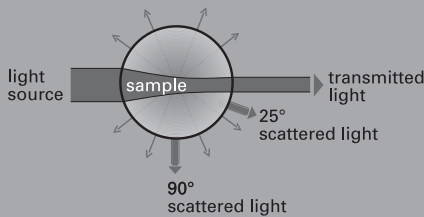
Features

- Easy installation using a standard in-line housing
- Single- or dual-angle measurement with one sensor head
- Measuring span 0 .. 500 EBC/ 0 .. 2000 NTU
- Sensor-check function
- Dual-beam measurement for compensation of color and window fouling
- Hygienic design
- Ex-version EEx-d

IN-LINE TURBIDIMETER DUALSCAT

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Turbidity measurement for process control



Measurement method

Turbidity is created in liquids by solid particles. When a light beam is passed through the sample, these particles scatter it. Measurement of the scattered light intensity and determination of the turbidity level therefore provide reliable information about the concentration of solid particles in the liquid.

Turbidity is an important measured variable for ensuring product purity and for controlling various process steps (such as filtration and crystallization) in the food industry and in the chemical and pharmaceuticals industries.

DualScat uses another modification of the dual-beam technique that has proven so successful for SIGRIST. Transmitted light, 90° scattered light and 25° forward scattered light from a single light source are all measured simultaneously. During calculation of the turbidity reading, these three measured values are combined in simple fashion to compensate the effects of any color-related absorption in the medium, window fouling or light source fluctuations.

SIGRIST's DualScat turbidimeter measures the intensity of the light scattered at two different angles. This provides more information than just one turbidity reading. The 90° scattered light primarily indicates the concentration of small particles or colloidal turbidity. The forward scattered light is caused mainly by larger particles.

Calibration

The SIGRIST DualScat is calibrated at the factory with formazine. Formazine is the reference standard for the units EBC, NTU and TE/F. Other user-specific units can be programmed with a conversion factor. Thanks to use of the dual-beam technique, the factory calibration exhibits excellent long-term stability. For subsequent checking of the calibration in compliance with ISO 9001, a calibration unit with a solid reference is available that eliminates the need to handle formazine.

In addition, the DualScat possesses a sensor-check function that checks the reading's plausibility either at fixed intervals or upon manual initiation.

Operation and communication

The DualScat is operated with the SIREL control unit. With its two-line LC display and plain-text-guided operating structure, the SIREL affords simple access for instrument operation, configuration and servicing. The SIREL has one 0/4 .. 20 mA current output for each measurement angle and two independently configurable relay contacts for use as either limit or alarm contacts.

Available optionally is a BUS coupler for connection to PROFIBUS DP, PROFIBUS FMS, INTERBUS, or CAN OPEN. It permits direct transmission of readings and control of process equipment via the digital interface.

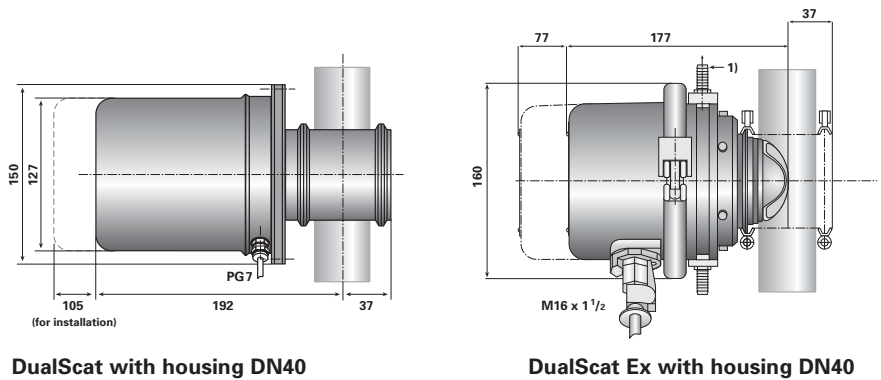
Process fitting

The DualScat is inserted into the product pipe using a standard in-line housing. Suitable housings are available as accessories for pipe diameters from DN40 to DN150 or 1" to 6". These housings ensure both easy installation of the sensor and optimal CIP/SIP cleaning. The optical window is secured with a double-seal system with leakage monitoring. The seal and the window can be replaced very easily should this become necessary.

Installation/mounting

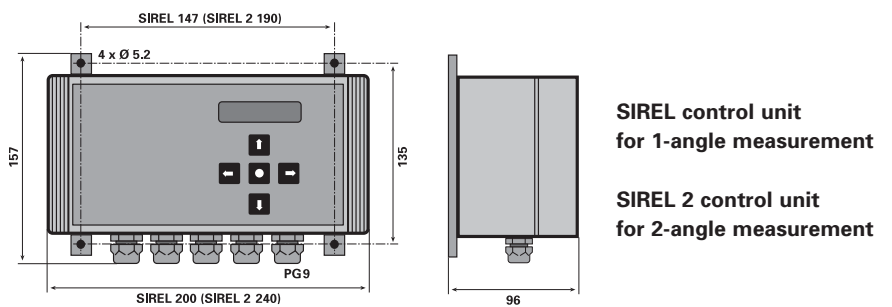
The DualScat can be installed in horizontal or vertical product pipes. In the case of horizontal pipes, the sensor should be mounted on the side of the pipe. A special blanking plate is mounted opposite the sensor to minimize stray light. The sensor should be mounted sufficiently far away from sight glasses or other sources of stray light.

Dimensions



DualScat with housing DN40

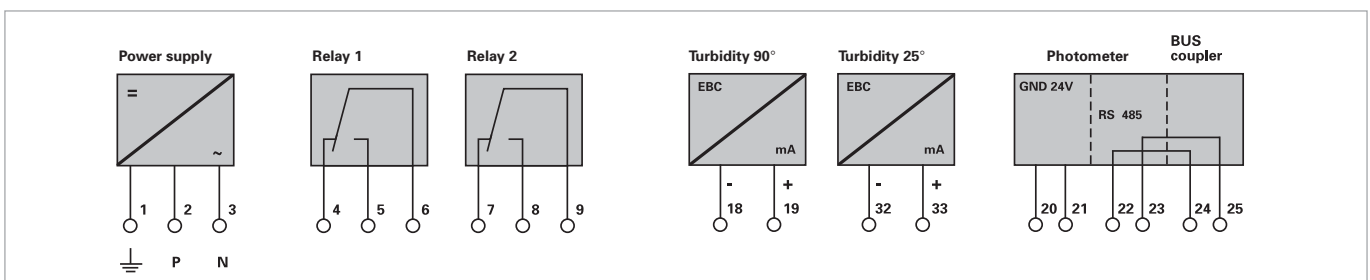
DualScat Ex with housing DN40



SIREL control unit for 1-angle measurement

SIREL 2 control unit for 2-angle measurement

Wiring diagram



SPECIFICATIONS

Turbidity measurement

Measuring principle:	90° / 25° scattered light measurement
Measuring span:	0 .. 500 EBC, 0 .. 2000 NTU
Measuring ranges:	8 ranges for each measuring angle between 0 .. 0.5 and 0 .. 500 EBC, freely configurable
Standard setting:	0 .. 0,5/0 .. 1/0 .. 2/0 .. 5/0 .. 10/0 .. 50/0 .. 100/0 .. 500 EBC
Measurement wavelength:	650 nm

Photometer DualScat

Installation:	In-line housing (Varivent® or compatible) with welding ends; flange connection on request
Flow cell material:	Stainless steel 1.4435 (316L) As option: pure Hastelloy for product contacted parts
Windows:	Borosilicate glass / sapphire
Seals:	EPDM / Viton / NBR / Kalrez
Housing material:	Stainless steel 1.4301 (304); DualScat Ex: 1.4301 (304)/GK-AISI 13 with synthetic resin finish
Sample temperature:	-10 °C .. +80 °C, short-time 120 °C
Cleaning:	CIP/SIP-compatible up to 120 °C,
Pressure:	20 bar
Ambient temperature:	-10 °C .. +50 °C
ATEX class:	EEx-d II
Protection type:	IP 65
Weight:	3.4 kg; DualScat Ex: 6.4 kg

Control Unit SIREL

Power supply:	85 .. 264 V / 47 .. 440 Hz or 24 V DC
Power input:	18 W
Display:	LC display with plain text information
Current output:	0/4 .. 20 mA per measuring angle; burden max. 600 Ω
Limits:	2 separately configurable relay contacts 250 V AC, 4 A
Protection type:	IP 65
Weight:	1.5 kg
Connection to DualScat:	4-core cable up to 100 m; longer distances on request

Represented by:

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