

## Sentro Vortex Air Flow Sensor

Flow velocity/volume measurement of air, gases and vapours

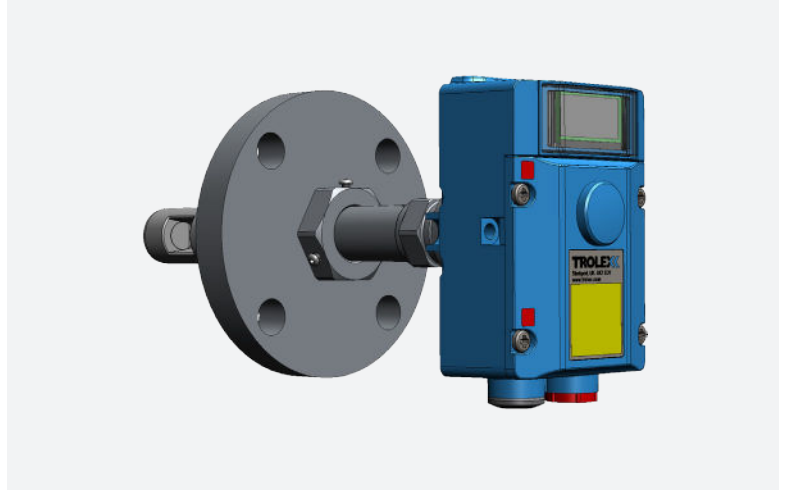
**Environments:** Tunnelling • Mining • Pipelines • Roadways • Ventilation ducts • Process industries

### Features

- Vortex monitoring principle with no moving parts
- Output signal linearly proportional to flow velocity
- Programmable function and display configuration
- Programmable alarm setpoints with integral flashing visual warning alarm
- Choice of analogue and digital output signals:
  - 0.4 to 2 V analogue output
  - 4 to 20 mA analogue output
  - Dual relay contacts
  - RS485 digital output
- Rangeable flow velocity from 0.5 m/sec to 30 m/sec
- Security code to prevent tampering
- 12 V dc version certified intrinsically safe for underground mining and tunnelling applications. 24 V dc version for general purpose applications

### Benefits

- The high-brightness backlit LCD screen provides clear flow velocity information with direct on-screen instructions and diagnostic data
- Dual-wall housing gives maximum impact strength, is protected against dust and moisture to IP65, and is EMC protected for use in arduous operating environments
- Housing cover can be easily removed, with power applied, for control module replacement and servicing
- Self cleaning vortex sensing head gives long term stability
- RS485 output option enables up to 32 sensors to communicate with a master controller on a single data cable



**Certification pending**



## Functional Overview

Fixed point gas flow velocity measurement in pipes, ducts and open roadways. Ventilation, cooling systems and process condition monitoring in heavy duty industrial applications and hazardous areas.

Trueflow velocity monitoring - the Trolex TX5951 Sentro Vortex Air Flow Sensor responds to the velocity of the air or gas being monitored and generates an output signal that is linearly proportional to the actual flow velocity. No additional correction of the output signal is necessary to compensate for temperature and static pressure.

Mass flow is measured directly and can be user configured for volumetric calculation.

Choice of output signals:

- 0.4 to 2 V analogue output



- 4 to 20 mA analogue output



- Dual relay contacts



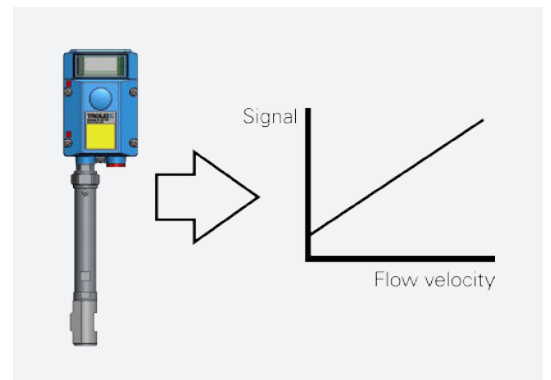
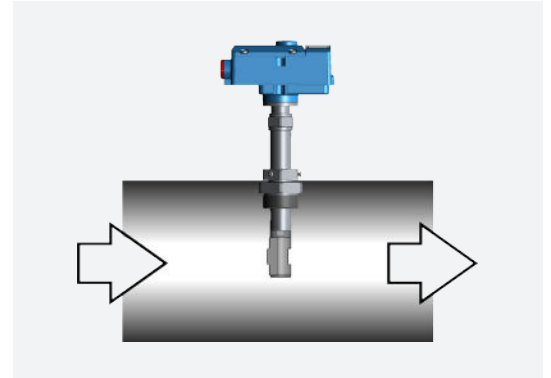
- RS485 digital output



The Sentro Vortex can be supplied with a choice of output signals for convenient interfacing with control and monitoring systems. RS485 Modbus is available for networking up to 32 sensors to a PC.

Integral alarm indicators - setpoint alarm LED indicators can be configured to give Warning or High alerts.

Sentro control module - all calibration data and the configuration of the sensor is stored in the plug-in control module. The control module can be reconfigured from the main menu or replaced with a precalibrated module for change of duty.





# TX5951 Data Sheet

## Technical Information

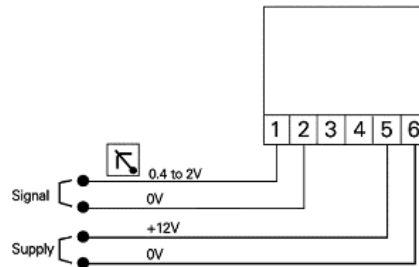
Flow measuring range:	Rangeable from 0.5 to 5 m/s to 0.5 to 30 m/s
Accuracy:	+/- 2% within 12.5° rotation of flow axis
Linearity:	+/- 1%
Ambient temperature limits:	-15 to +50°C
Sensor temperature limits:	-20 to +150°C
Humidity:	0 to 95% non-condensing
Protection classification:	Dust and waterproof to IP65
Process media:	Gas, air, steam or saturated vapour
Housing material:	Reinforced polymer
Sensor material:	Stainless steel - grade 316
Flexible cable (remote sensor)	PVC coated armoured flexible conduit
Maximum static pressure:	20 bar
Process fittings:	<ul style="list-style-type: none"><li>• 1½" BSP mounting bush</li><li>• 50 mm ANSI mounting flange</li></ul>
Cable entry:	<ul style="list-style-type: none"><li>• Rear projecting sensing probe - 2 x M20</li><li>• Side projecting sensing probe - 1 x M20</li><li>• Remote mounted sensing probe - 1 x M20</li></ul>
Nett weight:	<ul style="list-style-type: none"><li>• Rear projecting sensing probe - 1.5 kg</li><li>• Side projecting sensing probe - 1.5 kg</li><li>• Remote mounted sensing probe - 2.5 kg</li></ul>
Information display	128 x 64 dot graphic backlit LCD screen
Vibration limits	Vibration limits (EN 60079-29-1): <ul style="list-style-type: none"><li>• 10 to 30 Hz - 1.00 mm total excursion</li><li>• 31 to 150 Hz - 19.6 m/s<sup>2</sup> acceleration peak</li></ul>
Impact limits	20 joules (housing)
Output signal options	<ul style="list-style-type: none"><li>• 0.4 to 2 V</li><li>• 4 to 20 mA</li><li>• Dual relay contact</li><li>• RS485 data</li></ul>
Alarms	Programmable Warning and High alarm levels with LED indicators
Menu configuration	<ul style="list-style-type: none"><li>• Security code protection</li><li>• Scale factor selection (linear/volume/time)</li><li>• Setpoint level and mode adjustment</li><li>• Data output protocol configuration</li><li>• Flow units selection</li><li>• Duty display text entry</li></ul>
Fault indication	<ul style="list-style-type: none"><li>• Loss of communications</li><li>• Sensing module absent</li><li>• Sensor over-range</li></ul>

## Electrical Information

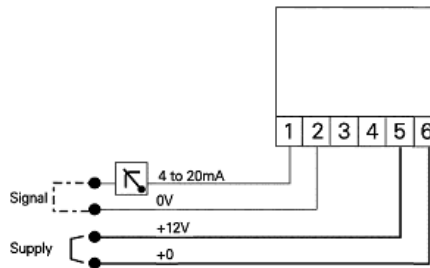
	Mining Ex ia	General Purpose
Supply voltage:	12 V dc +/- 10%	24 V dc +/- 10%
Supply current:		
0.4 to 2 V	60 mA	40 mA
4 to 20 mA	70 mA	40 mA
Dual relay contact	85 mA	45 mA
RS485 data	60 mA	40 mA
Maximum line load:	220 R	500 R

## Connections

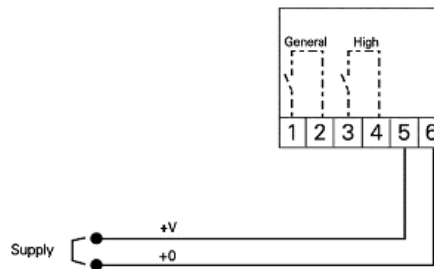
### 0.4 to 2 V



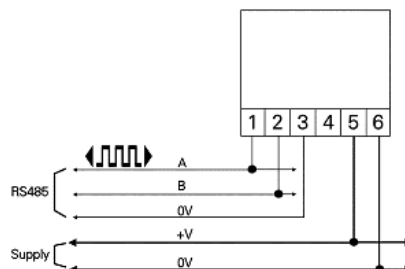
### 4 to 20 mA



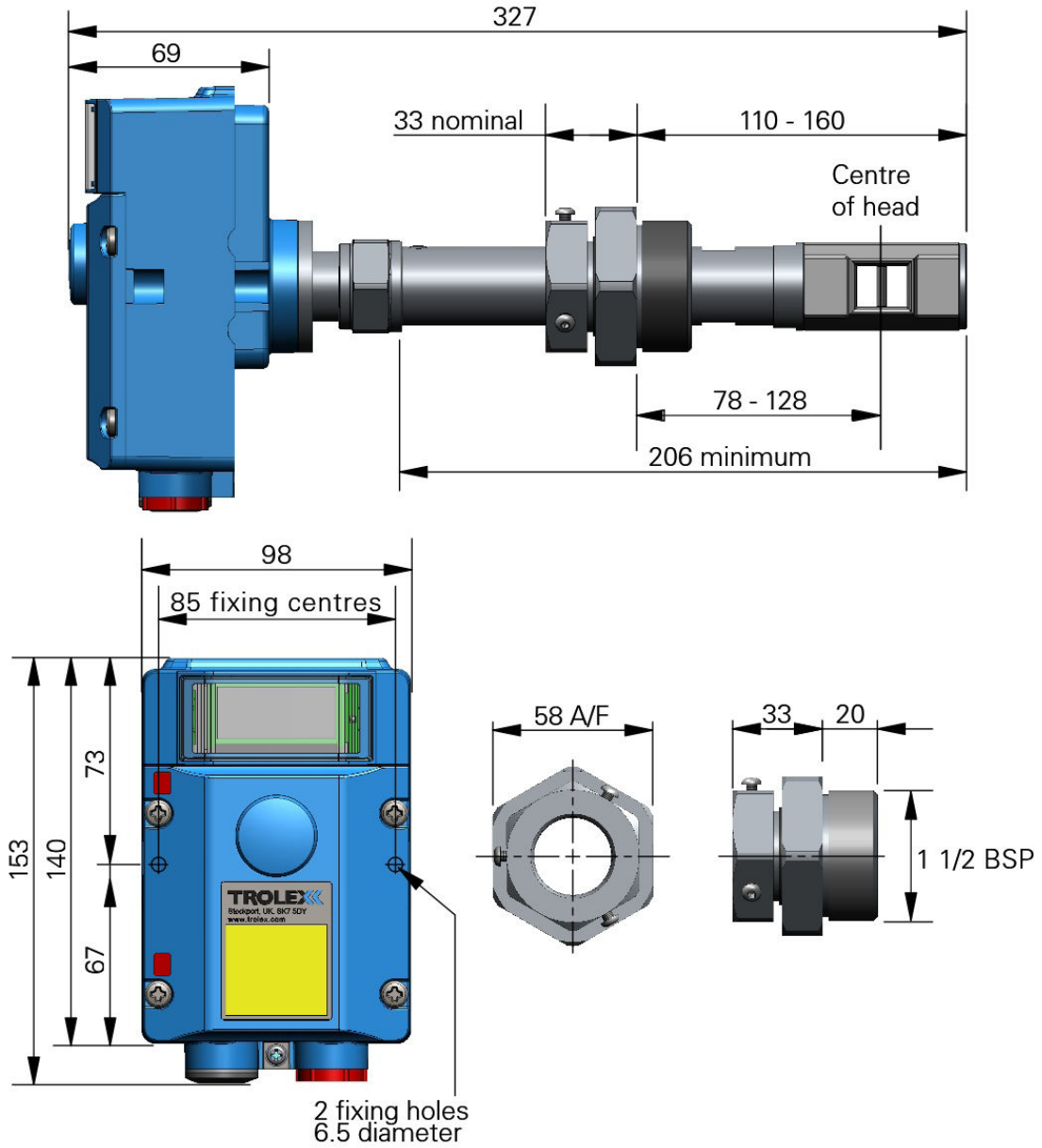
### Dual relay contact



### RS485

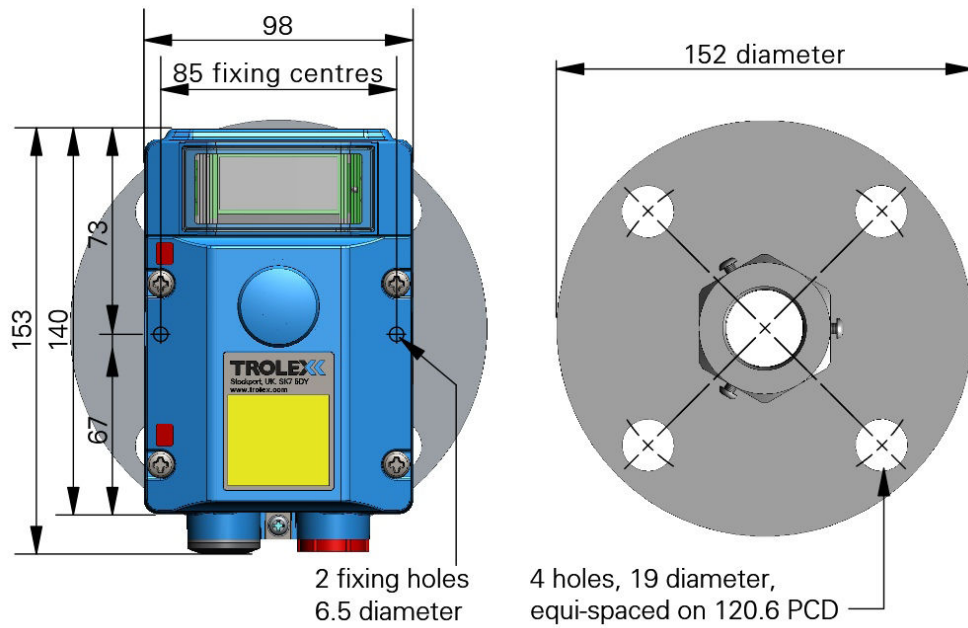
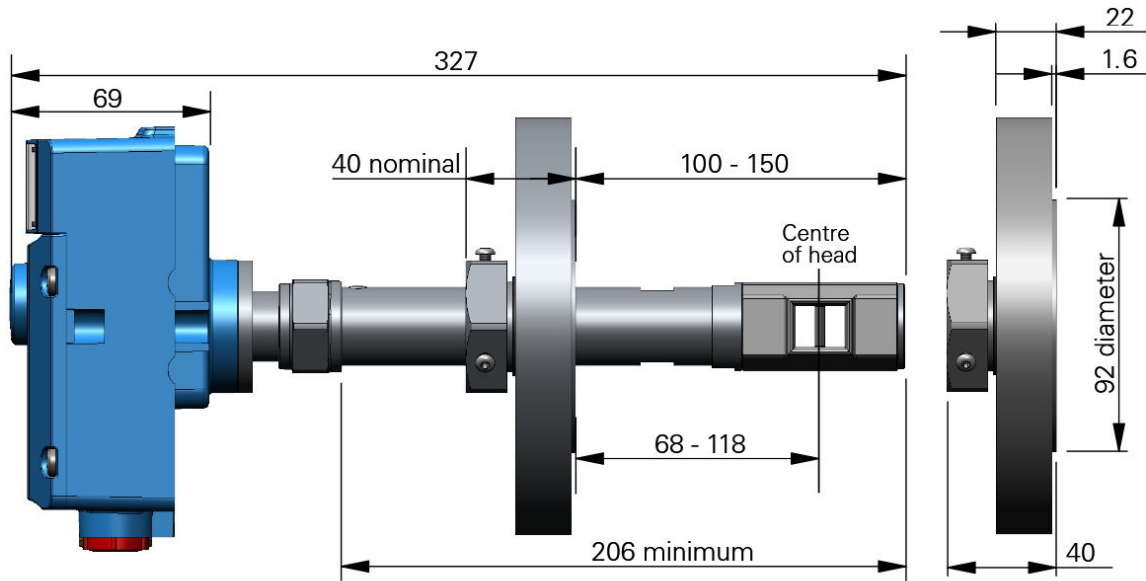


**Dimensions - Rear Projecting Sensor - Bush**



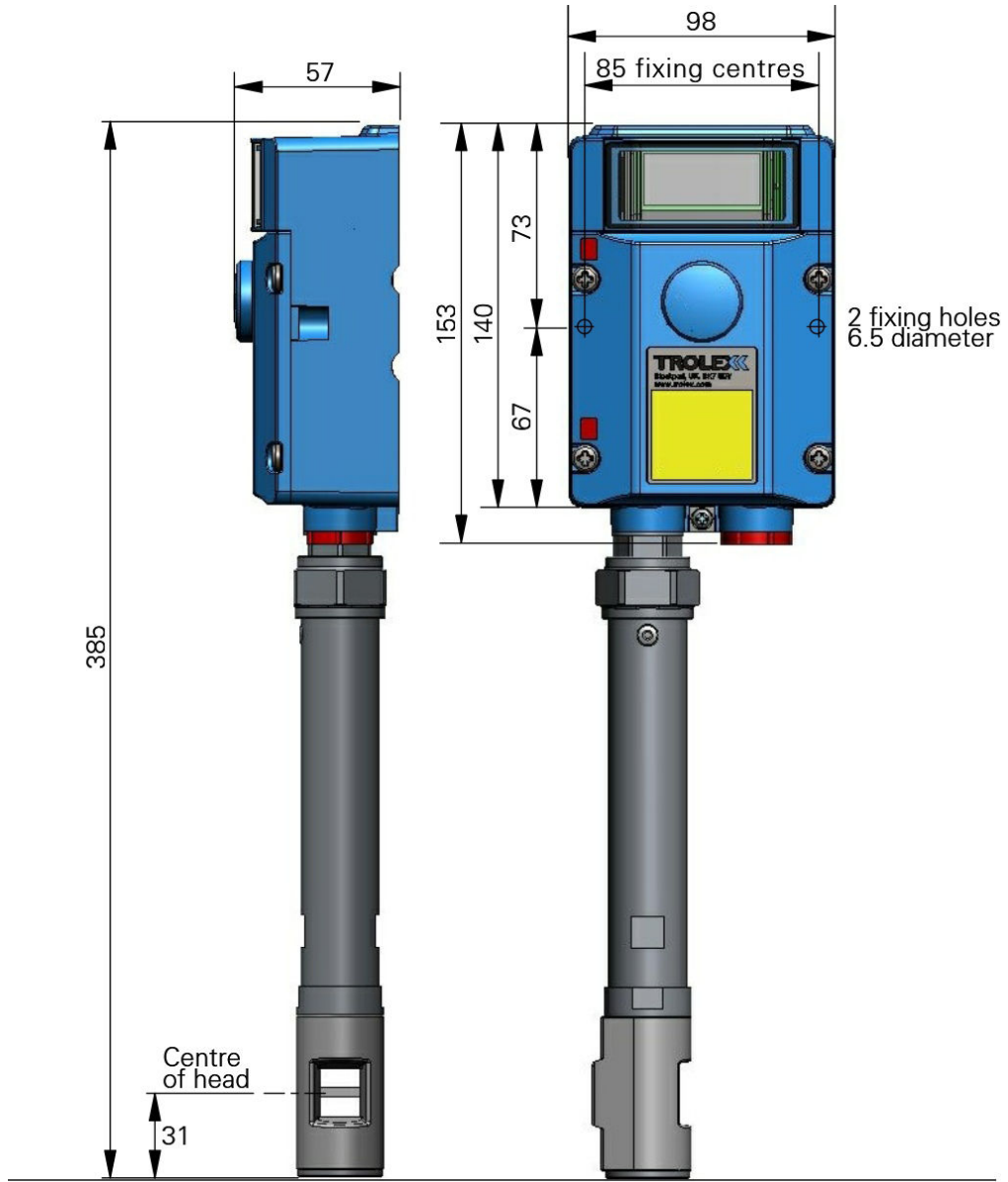
All dimensions in mm  
Probes available from 160 to 2000 mm insertion length in 100 mm increments

**Dimensions - Rear Projecting Sensor - Flange**



All dimensions in mm  
Probes available from 160 to 2000 mm insertion length in 100 mm increments

**Dimensions - Side Projecting Sensor**

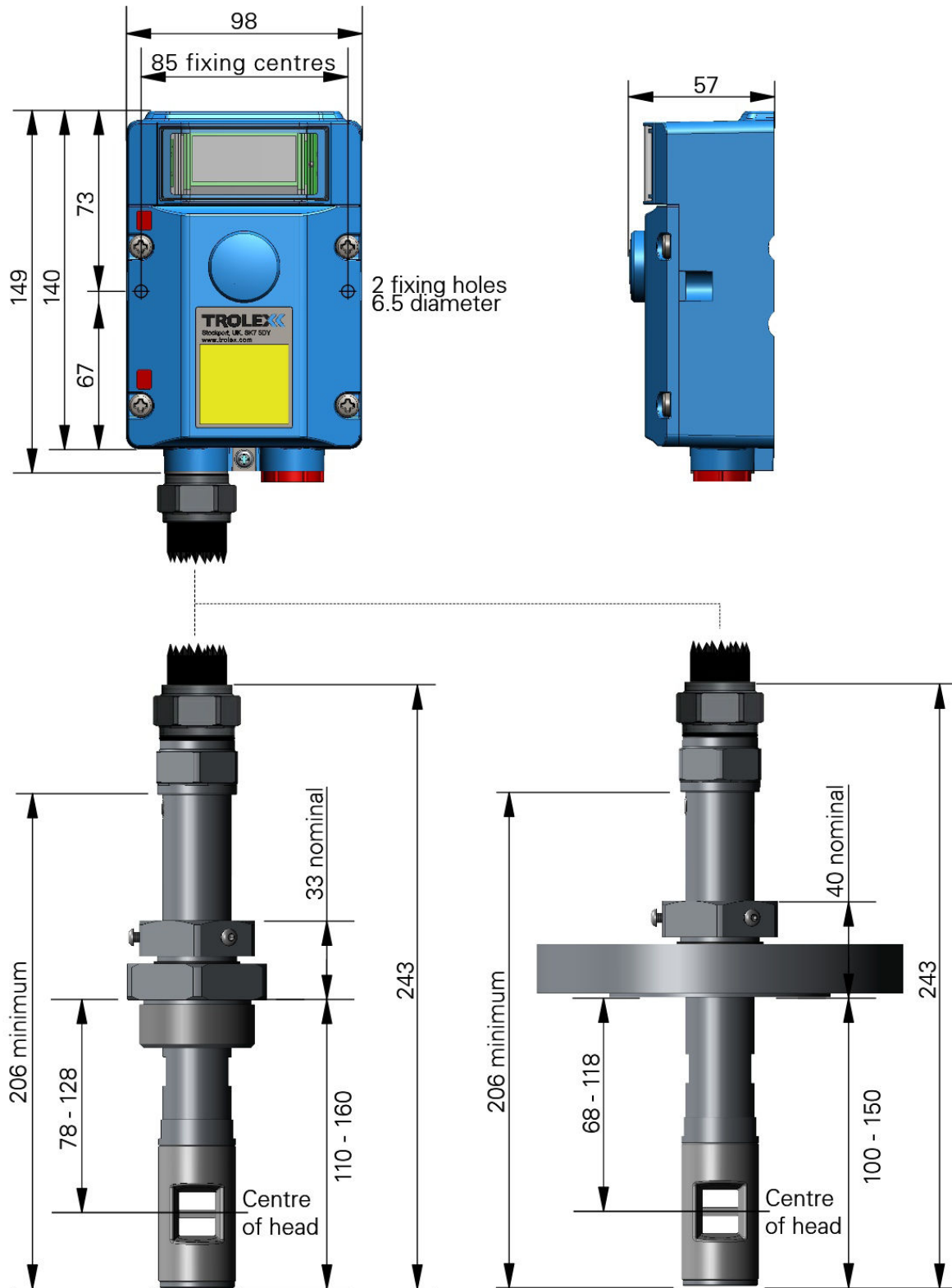


All dimensions in mm  
Probes available from 160 to 2000 mm insertion length in 100 mm increments



# TX5951 Data Sheet

## Dimensions - Remote Mounted Sensor



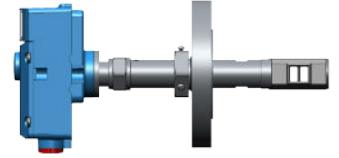
All dimensions in mm  
Probes available from 160 to 2000 mm insertion length in 100 mm increments



## Order Reference

### Rear Projecting Sensor With 50 mm ANSI Mounting Flange

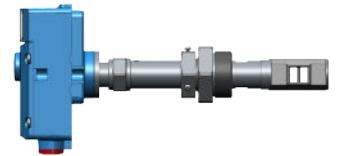
Output	Mining Ex ia	General Purpose
0 to 2 V output	TX5951.01.11.82.21	N/A
4 to 20 mA output	TX5951.01.12.82.21	TX5951.03.12.82.21
Dual relay output NO	TX5951.01.14NO.82.21	TX5951.03.14NO.82.21
Dual relay output NC	TX5951.01.14NC.82.21	TX5951.03.14NC.82.21
RS485 output	TX5951.01.15.82.21	TX5951.03.15.82.21



Please specify any non-standard process fittings when ordering • Please specify the probe length when ordering, probes available from 160 to 2000 mm insertion length, in 100 mm increments.

### Rear Projecting Sensor With 1 1/2" BSP Mounting Bush

Output	Mining Ex ia	General Purpose
0 to 2 V output	TX5951.01.11.82.22	N/A
4 to 20 mA output	TX5951.01.12.82.22	TX5951.03.12.82.22
Dual relay output NO	TX5951.01.14NO.82.22	TX5951.03.14NO.82.22
Dual relay output NC	TX5951.01.14NC.82.22	TX5951.03.14NC.82.22
RS485 output	TX5951.01.15.82.22	TX5951.03.15.82.22



Please specify the probe length when ordering, probes available from 160 to 2000 mm insertion length, in 100 mm increments.

### Side Projecting Sensor

Output	Mining Ex ia	General Purpose
0 to 2 V output	TX5951.01.11.83	N/A
4 to 20 mA output	TX5951.01.12.83	TX5951.03.12.83
Dual relay output NO	TX5951.01.14NO.83	TX5951.03.14NO.83
Dual relay output NC	TX5951.01.14NC.83	TX5951.03.14NC.83
RS485 output	TX5951.01.15.83	TX5951.03.15.83



Please specify the probe length when ordering, probes available from 160 to 2000 mm insertion length, in 100 mm increments.

### Remote Mounted Sensor with 50 mm ANSI Mounting Flange

Output	Mining Ex ia	General Purpose
0 to 2 V output	TX5951.01.11.84.21	N/A
4 to 20 mA output	TX5951.01.12.84.21	TX5951.03.12.84.21
Dual relay output NO	TX5951.01.14NO.84.21	TX5951.03.14NO.84.21
Dual relay output NC	TX5951.01.14NC.84.21	TX5951.03.14NC.84.21
RS485 output	TX5951.01.15.84.21	TX5951.03.15.84.21



Please specify cable length and any non-standard process fittings when ordering • Please specify the probe length when ordering, probes available from 160 to 2000 mm insertion length, in 100 mm increments.

## Order Reference - continued

### Remote Mounted Sensor with 1 1/2" BSP Mounting Bush

Output	Mining Ex ia	General Purpose
0 to 2 V output	TX5951.01.11.84.22	N/A
4 to 20 mA output	TX5951.01.12.84.22	TX5951.03.12.84.22
Dual relay output NO	TX5951.01.14NO.84.22	TX5951.03.14NO.84.22
Dual relay output NC	TX5951.01.14NC.84.22	TX5951.03.14NC.84.22
RS485 output	TX5951.01.15.84.22	TX5951.03.15.84.22



Please specify cable length when ordering • Please specify the probe length when ordering, probes available from 160 to 2000 mm insertion length, in 100 mm increments.

Please contact the Trolex Sales Team for further information and advice:

+44 (0)161 483 1435  
sales@trolex.com

## Certifications



### Europe ATEX

Ex Certificate number: ??????  
Ex Certification codes: ??????



### International IECEx

Ex Certificate number: ??????  
Ex Certification codes: ??????



### Russia (GOST-R)

Ex Certificate number: ??????  
Ex Certification codes: ??????



### South Africa MASC:

Ex Certificate number: ??????  
Ex Certification codes: ??????

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