

## Overview



SITRANS WS100 speed sensor is a compact, medium-resolution, pulley shaft-driven belt speed sensor with magnetic mounting. It is ideal for aggregate and mineral processing industries.

## Benefits

- Small, light-weight
- Good resolution for accurate measurement, suitable for varying shaft speeds
- Long bearing life

## Application

SITRANS WS100 speed sensor operates in conjunction with a conveyor belt scale, providing a signal to an integrator (Milltronics BW100 or BW500, or SIWAREX FTC module) which computes the rate of material being conveyed. It is lightweight at 1.22 kg (2.68 lbs) and durable, for easy installation and prolonged bearing life.

The WS100 converts shaft rotation into a pulse train of 8 pulses per revolution. These pulses are typically fed into a Milltronics belt scale integrator. The integrator interprets the pulses and uses them in the calculation of belt speed, flow rate, and material totalization. In non-belt scale applications, the WS100 can be used to monitor rotational speed when directly connected to a PLC.

The WS100 IS (Intrinsically Safe) version contains an inductive proximity switch which transmits the pulses via a Switch Isolator for hazardous area locations.

## Technical specifications

<b>Mode of operation</b>	
Measuring principle	Proximity sensor provides pulse to integrator
<b>Typical application</b>	
Aggregate belt conveyors	
<b>Input</b>	
shaft rotation 15 ... 1500 rpm, bi-directional	
shaft rotation 15 ... 300 rpm, bi-directional with magnetic connector	
<b>Output</b>	
<ul style="list-style-type: none"> <li>• 8 pulses per revolution</li> <li>• 0 ... 200 Hz, 0 ... 40 Hz with magnetic connection</li> <li>• WS100 standard: open collector sinking output, 25 mA</li> <li>• WS100 IS: load current, 0 ... 15 mA</li> <li>• Integrator minimum usable frequency 2 Hz</li> </ul>	
<b>Rated operating conditions</b>	
Standard	-40 ... +110 °C (-40 ... +230 °F)
Intrinsically Safe	-25 ... +100 °C (-14 ... +212 °F)
Degee of protection	IP67
<b>Enclosure</b>	
polypropylene base and target enclosure with 304 (1.4301) stainless steel access cover	
304 (1.4301) stainless steel shaft, bearings and hardware	
<b>Power</b>	
Standard	4.5 ... 28 V DC, 16 mA
Intrinsically Safe	5 ... 25 V DC from IS Switch Isolator
<b>Cable</b>	
Standard	<ul style="list-style-type: none"> <li>• 3 m (10 ft), 3 conductor 22 AWG (0.324 mm<sup>2</sup>), PVC shielded cable</li> <li>• 300 m (1000 ft) maximum cable run</li> </ul>
Intrinsically Safe	<ul style="list-style-type: none"> <li>• 2 m (6.5 ft), 2 conductor 26 AWG (0.129 mm<sup>2</sup>), PVC covered cable</li> <li>• 300 m (1000 ft) maximum cable run to IS switch isolator</li> <li>• 300 m (1000 ft) maximum cable run from IS switch isolator and integrator</li> </ul>
<b>Certificates and approvals</b>	
Standard	CE, C-TICK
Intrinsically Safe	CE, ATEX and CSA approved, Pepperl + Fuchs Proximity Switch and IS Switch Isolator

# Belt Weighing

## Speed Sensors

### SITRANS WS100

Selection and Ordering data	Order No.
<b>SITRANS WS100 Speed Sensor</b> A compact, medium-resolution, pulley shaft-driven belt speed sensor with magnetic mounting; ideal for aggregate and mineral processing industries.	C) <b>7MH7176-</b>
<b>Model</b> 8 PPR	1
<b>Fabrication</b> Polycarbonate construction with 304 stainless steel sensor cover	A
<b>Mounting</b> M12X1.75 threaded shaft Magnetic connector	A B
<b>Approvals</b> Standard CE, C-TICK CE, C-TICK, ATEX II 2 G, Eex ia IIC and CSA/FM Class 1, Div. 1, Groups A, B, C and D, Class II Div. 1, Groups E, F and G <sup>1)</sup>	0 1
<b>Switch Isolator</b> Not required 115 V AC (required with IS option 1) 230 V AC (required with IS option 1)	0 1 2
<b>Instruction manual</b> SITRANS WS100, English SITRANS WS100, German Note: The instruction manual should be ordered as a separate item on the order.  This device is shipped with the Siemens Milltronics manual CD containing the complete instruction manual library.	C) <b>7ML1998-5LU01</b> C) <b>7ML1998-5LU31</b>
<b>Spare Parts</b> Switch, Standard Magnetic Pickup Switch, inductive, NJO.8-5GM-N for Approvals option 1 WS100 Magnetic Connector P & F Switch Isolator, 115 V AC, required for Approvals option 1 P & F Switch Isolator, 230 V AC, required for Approvals option 1	C) <b>7MH7723-1GA</b> C) <b>7MH7723-1AS</b> C) <b>7MH7723-1GF</b> <b>7MH7723-1EB</b> <b>7MH7723-1EC</b>

<sup>1)</sup> Approvals option 1 requires use of Switch Isolator to interface with the belt-scale integrator.

C) Subject to export regulations AL: N, ECCN: EAR99

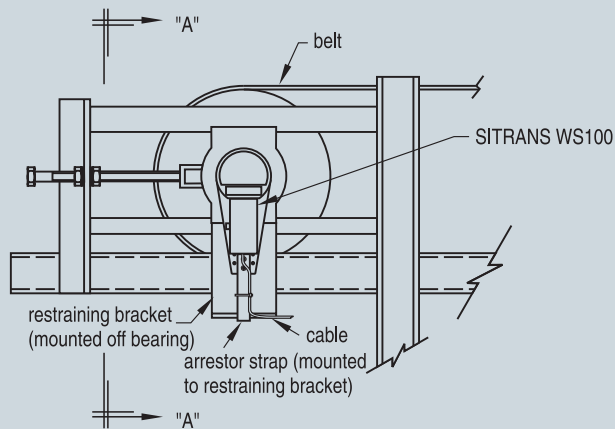
## Design

The input shaft on the SITRANS WS100 is coupled to the rotating shaft on a belt-driven pulley with a tapped hole, and is externally supported. The unit's flexible arresting strap stops it from rotating with the shaft, without causing bearing stress, and can be fitted to any rigid member close to the sensor.

When mounting, ensure the unit and the pulley shaft are concentric to avoid stresses on the unit's bearings.

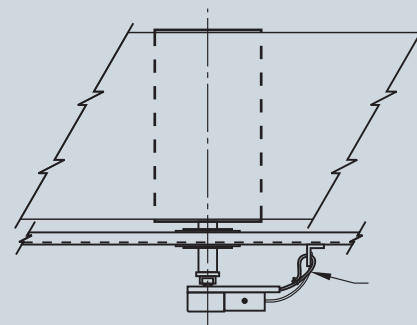
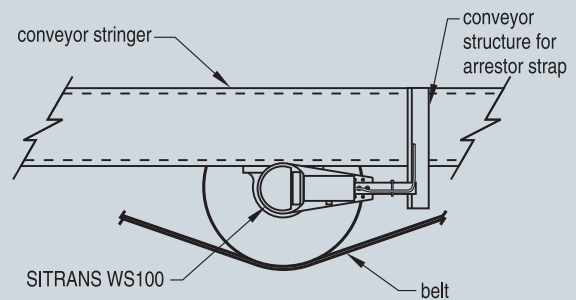
For mounting using the magnetic connector, ensure the face of the rotating shaft on the belt driven pulley is flat, and has no burrs or damage that may prevent flush mounting of the magnetic connector. Attach the SITRANS WS100 speed sensor to the shaft; the magnetic connector will center itself as the belt driven pulley rotates.

### Mounting to a Tail Pulley



VIEW "A" - "A"

### Mounting to a Bend or Snub Pulley



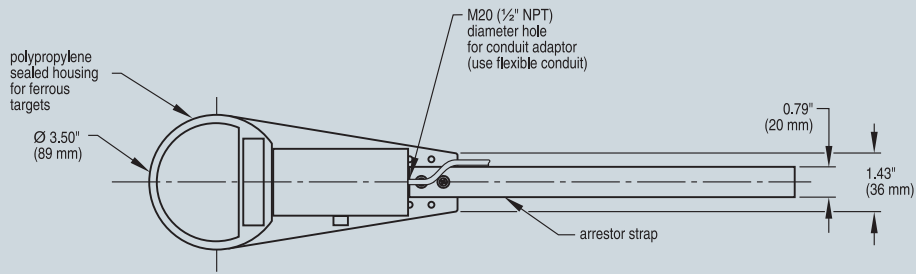
WS100 installation

# Belt Weighing Speed Sensors

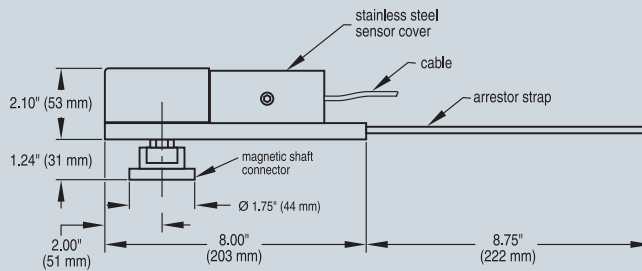
## SITRANS WS100

### Dimensional drawings

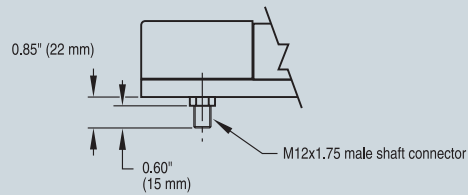
#### Dimensions



#### Magnetic shaft connector option



#### Male shaft connector option



WS100 dimensions

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