

*Specification DataFile*

---

- **Wide range of sensors**
  - extends the scope of application
  
- **Stainless steel construction**
  - resistant to chemical attack
  
- **All sensors calibrated with standard outputs**
  - easy to change without the need for recalibration
  
- **Ranges from 5m to 250m available**
  - level measurement for reservoirs, tanks and boreholes
  
- **All sensors have inbuilt temperature compensation**
  - reduces thermal drift errors
  
- **Inbuilt transient protection**
  - limits effect of lightning damage



***Hydrostatic pressure sensors for the measurement of depth/level in boreholes, reservoirs and storage tanks***

## Introduction

DATUM P871 Series is a range of submersible hydrostatic level sensors designed primarily for use with ABB's DATUM level systems.

The P871 is a loop-powered, 4 to 20mA output sensor for use with a DATUM L150/L160 Indicator or as the primary input device to other control and recording loops.

### DATUM P871 Loop-powered

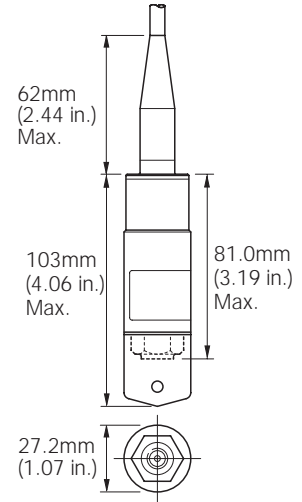


#### Submersible Level Sensor

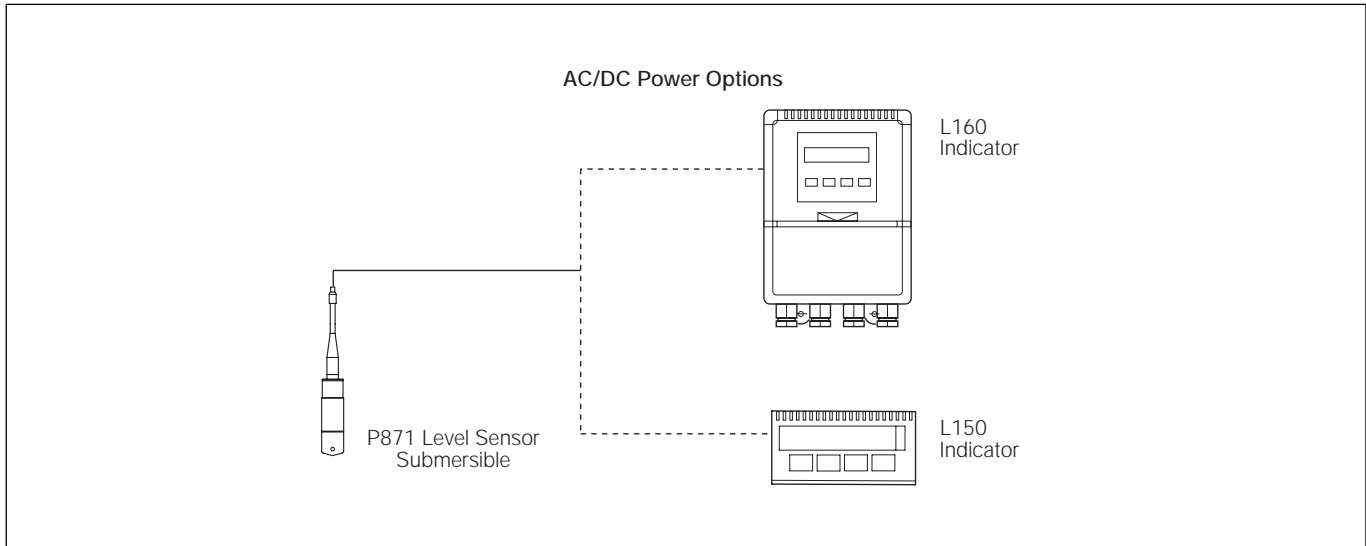
The **DATUM P871** sensor, with its all-stainless steel construction and small overall diameter of 27.2mm (1.07 in.), is ideally suited for installation on older or more compact boreholes.

The cable includes an integral stainless steel suspension membrane for easy installation.

The **DATUM P871** is loop-powered via a 7 to 35V d.c. supply, giving a 4 to 20mA signal proportional to the sensor full range.



## Typical Application



## Specification

### P871 Loop-Powered Submersible Level Sensor

#### Ranges

Spans from 0 to 5m up to 0 to 250m  
(0 to 24.7 ft. up to 0 to 829 ft.)

#### Maximum overrange

2 times rated pressure when applied for 3 minutes does not cause a zero shift in excess of 0.5% span

#### Fatigue life

Designed for 100 million cycles zero to span pressure

#### Reference performance

Reference conditions –  
ambient temperature 25°C (77°F)

#### Base accuracy

Zero: 4mA ± 0.16mA  
Span: 16mA ± 0.16mA  
(Typical error band ±0.25%)

#### Long term drift

< 0.2% span/annum

### Electrical

2-wire loop-powered  
4 to 20mA output proportional to span  
Fitted with reverse polarity protection

#### Supply voltage

7 to 35V d.c.

#### Max. load

$\Omega = 50 \times (\text{Supply voltage} - 7)$

### Mechanical

#### Dimensions

27.2mm (1.07 in.) diameter  
103mm max. (4.06 in. max.) length  
(including Nosecone)  
Process connection  
G<sup>1</sup>/<sub>8</sub> internal thread to BS2779 compatible with ISO 228.  
Fitted with Nosecone

#### Weight

0.2kg (0.44 lb) (without cable)

#### Material of Construction

Main body tube 316/321 stainless steel  
Process port 17–4pH stainless steel  
Sensor diaphragm 17–4pH stainless steel  
Nose cone Acetyl  
Cable 2-wire screened with integral suspension cable and vent tube. Material – polythene

### Environmental

Operating temperature range	–40° to +125°C (–4° to 250°F)
Compensated temperature range	–20° to +80°C (–4° to 176°F)
Operating cable temperature	–20° to +55°C (–4° to 131°F)
Storage temperature	–25° to +85°C (–13° to 185°F)
Zero temperature coefficient	±0.02% FS/°C (±0.011% FS/°F)
Span temperature coefficient	±0.02% FS/°C (±0.011% FS/°F)
Vibration	35g peak sinusoidal, 5Hz to 2kHz
Enclosure	IP68 to 200m (392 ft.) max. temperature 50°C (122°F)

### Ordering Information

P871 Submersible Level Sensor		P871/	XX	XXX
Pressure Range (metres WG)	0 to 5		01	
	0 to 10		02	
	0 to 15		03	
	0 to 25		04	
	0 to 40		05	
	0 to 60		06	
	0 to 100		07	
	0 to 150		08	
	0 to 250		09	
Cable Length (metres)	1			001
	3			003
	5			005
	10			010
	15			015
	20			020
	25			025
	30			030
	40			040
	50			050
	75			075
100			100	
125			125	
150			150	



The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

© ABB 2001

Printed in UK (10.01)

SS/P871 Issue 1

---

**ABB Automation Ltd**  
Howard Road, St. Neots  
Cambridgeshire, PE19 8EU  
UK  
Tel: +44 (0)1480 475 321  
Fax: +44 (0)1480 217 948

**ABB Automation Inc**  
125 E. County Line Road  
Warminster, PA 18974  
USA  
Tel: +1 215 674 6000  
Fax: +1 215 674 7183

**ABB** has Sales & Customer Support  
expertise in over 100 countries worldwide

[www.abb.com](http://www.abb.com)