

Specification for

Differential pressure transmitters with electrical outputs

UDC 621.317.39:531.787.91

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- Department of Industry
- Department of Industry (Computers Systems and Electronics)
- Department of Industry (National Engineering Laboratory)
- Department of the Environment (Water Engineering Division including Water Data Unit)
- Electrical, Electronic, Telecommunications and Plumbing Union
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- Oil Companies Materials Association*
- Post Office Engineering Union
- Scientific Instrument Manufacturers' Association*
- Sira Institute

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- British Pressure Gauge Manufacturers' Association
- Chemical Industries Association
- Department of Energy Gas Standards
- National Coal Board

This British Standard, having been prepared under the direction of the Industrial-process Measurement and Control Standards Committee was published under the authority of the Board of BSI and comes into effect on 26 February 1982

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The following BSI references relate to the work on this standard:
Committee reference PCL/1
Draft for comment 74/27963 DC

ISBN 0 580 12411 8

Amendments issued since publication

Amd. No.	Date of issue	Comments
5222	September 1986	Indicated by a sideline in the margin

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Foreword

This standard has been prepared under the direction of the Industrial-process Measurement and Control Standards Committee.

The SI pressure unit “pascal” has been used throughout this standard. However, since a large sector of British industry is committed to the use of the pressure unit “bar” and intends to maintain this position, the equivalent in bars has been given in brackets after the value in pascals.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies requirements for d.c. powered electrical transmitters with analogue direct current output used in differential pressure measurement.

This standard applies only to transmitters with a linear relationship between differential pressure input and current output for general industrial use, and does not apply to aerospace, marine, laboratory and medical requirements.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this standard the following definitions apply.

3.1

measured error

the largest deviation of the output of the transmitter from its corresponding ideal value, obtained with both increasing and decreasing inputs

NOTE Measured error is expressed as a percentage of span and is determined in accordance with A.2.5.

3.2

hysteresis

that property of an element evidenced by the dependence of the value of the output, for a given excursion of the input, upon the history of prior excursions and the direction of the current traverse

NOTE This is a common usage definition which includes hysteresis error and dead band. That portion of the difference which is dependent on the history of prior excursion is hysteresis error while that portion attributable to dead band may be determined by a conventional dead band test.

3.3

hysteresis error

that portion of hysteresis attributable to energy absorption in the elements of a measuring instrument

NOTE Hysteresis error should be determined by subtracting the value of dead band from the maximum measured separation between upscale-going and downscale-going indications of the measured variable, during a full-range traverse unless otherwise specified.

3.4

dead band

the largest change in input that can be effected without causing a detectable change of output

3.5

range

the region between the limits within which a quantity is measured, received or transmitted expressed by stating the lower and upper range values

3.6

lower range value

the lowest value of the measured variable that a device is adjusted to measure

3.7

upper range value

the highest value of the measured variable that a device is adjusted to measure

3.8

span

the algebraic difference between the upper and lower range values

3.9

over-range

the condition in which the value of the input signal exceeds its upper range value or goes below its lower range value

3.10

repeatability

the closeness of agreement among a number of consecutive measurements of the output for the same value of the input under the same operating conditions, approaching from the same direction, for full-range traverses

3.11

transmitter

measuring transducer whose output is a standardized signal

4 Classification

The performance characteristics of transmitters are classified under four headings as follows:

- a) accuracy class;
- b) temperature coefficient class;
- c) static pressure class;
- d) over-range class.

For fixed range transmitters the performance characteristics shall be identified by a four-element code in the above order (see Table 1 to Table 4), followed by the range of pressure within which the characteristics apply.

For example: 0.5A3B, 0 kPa to 200 kPa (0 bar to 2 bar)