spirax /sarco IM-P403-42

AB Issue 2

DS1000 Digital Display

Installation and Maintenance Instructions

General safety information

Your attention is drawn to Safety Information Sheet IM-GCM-10 as well as to any National or local regulations.

Safe operation of the product depends on it being properly installed, commissioned and maintained by a qualified person in compliance with the operating instructions. It is essential to comply with general installation and safety instructions for pipeline and plant construction, as well as to make proper use of tools and safety equipment.



The product is designed and constructed to withstand the forces encountered during normal use. Use of the product for any other purpose, or failure to install the product in accordance with these Installation and Maintenance Instructions, could cause damage to the product, will invalidate the & marking, and may cause injury or fatality to personnel.

Application

The Spirax Sarco DS1000 is connected in series with a 4-20 mA current loop to provide an LCD display, in engineering units, of the process variable represented by the current flow.

It has many uses for level, conductivity, temperature or pressure indication. A specific application example is to provide a panel mounted display of TDS for the BC1100 and BC3100 TDS blowdown controllers, which are normally fitted inside a boiler panel.

It is supplied calibrated in percentage units to display 00.0 at 4 mA and 100.0 at 20 mA. Jumper links and potentiometers on the back of the instrument allow it to be scaled in other engineering units if required.

An aperture below the display shows the unit of measurement, and the special legend sheet supplied with the instrument enables alternative units of measurement to be selected if required.

Installation

The DS1000 is installed in a 92×44 mm cut-out in the boiler panel, using the gasket supplied to provide an IP65 seal for the front panel. The instrument case itself is not sealed.

The DS1000 is held in place by two metal clamp bars on diagonally opposite corners, fitted from the rear, and retained by sliding clips and screws. To remove the clamp bars, loosen the screws and slide the clip inwards.

The screen must be connected to earth at one point only, preferably at the transmitter end. Cabling should be installed in accordance with BS 6739 - Instrumentation in Process Control Systems: Installation design and practice or local equivalent.

To change the legend, \dot{c} ut the appropriate $\dot{7}$ x 36 mm identification strip from the legend sheet with scissors.

Use a pointed instrument, (a scalpel or a pin is ideal) to lift the edge of the front panel label slightly and withdraw the legend strip by sliding it to the right, over the small chamfer in the front panel bezel. Slide the new legend strip into place and press the front panel label down.

Wiring

The indicator is a two wire device, designed to be connected in series with a 4-20 mA current loop. Connection can be made at any point in the loop. A two pin connector, marked with the polarity, is provided at the back of the instrument.

Maintenance

The display has no user serviceable parts, and no maintenance is necessary.

Calibration using a 4-20 mA current source

The DS1000 is pre-calibrated to give a percentage reading.

A current source, such as a calibrator, may be used to calibrate to other units as follows:

- 1. Connect current source to the DS1000 terminals in order to simulate the current loop. Set to 20 mA and allow two minutes warm-up period.
- 2. Select the decimal point position by moving the 'DP' link to the appropriate setting as shown on the back of the instrument.

To obtain 1999 range remove the 'DP' link.

- 3. Remove the 'OFFSET' link and fit in the 'CAL' position.
- Set current to 16 mA, and adjust first the 'COARSE'. then the 'FINE - SPAN' potentiometers to obtain the required display span.



- 5. Remove the link from the 'CAL' position and return it to the 'OFFSET' position 'NORM'.
- 6. Set the current to 4 mA and adjust first the 'COARSE' then the 'FINE OFFSET' potentiometers to obtain the required reading at 4 mA. If the required reading is positive and cannot be obtained, move the 'OFFSET' link to 'POS' to

obtain more adjustment.

7. Set the current to 20 mA and check the display for the current 20 mA reading. Small errors of up to two counts may be trimmed out using the 'FINE' potentiometer. Errors greater than two counts point to incorrect calibration, possibly due to incorrect calculation of span.

Return to Step 3 and repeat the procedure. 8. Switch off supply and remove test equipment.

Example - Range 0-3.00 milli-Siemens/cm (0-3000µS/cm):

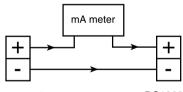
- Check 'DP' link is set to 19.99 (mS/cm).
- Move 'OFFSET' link to 'CAL' position.
- Set current to 16 mA and adjust 'COARSE' then 'FINE SPAN' potentiometers until display reads 3.00 (mS/cm).
- Remove link from 'CAL' position and return to 'OFFSET' position 'NORM'.
- Set current to 4 mA and adjust 'COARSE' then 'FINE OFFSET' potentiometers until the display reads 0.00 (mS/cm).
- Set current to 20 mA and check display reads 3.00 (mS/cm).
- Switch off supply and remove test equipment.

Calibration using a 4-20 mA output from an existing controller

A 4-20 mA output from an existing controller, such as the Spirax Sarco BC1100 or BC3100, may be used to calibrate the DS1000.

An ammeter with a suitable range for measuring 4-20 mA is also required, and is connected in series with the controller and the display unit to measure the transmitter current.

Its removal after the test does not affect calibration. The calibration procedure is the same as previously described, but the required current is set on the controller. either by adjusting its calibration setting or by varying the measured quantity.



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DP OFFSET

SPAN V

LOOP

4-20 mA output from controller

DS1000 Input terminals

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COARSE

0

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OFF SET

Fault finding

Most faults which occur on commissioning are found to be due to incorrect wiring or calibration. If the display does not function when connected:

- Check all the electrical connections are clean and tight and of the correct polarity.
- Check that the jumper links are correctly set.
- Check that the loop supply available is greater than 3 volts.

Connect an ammeter in series with the current loop and check current is between 4 and 20 mA. If possible vary the current over the working range.

If the display still does not function, the PCB mounted fuse could have blown or another fault may have occurred, and the unit will need to be returned for repair.