

ABSTRACT

**TRANSDUCER INTERFACE ARRANGEMENT INCLUDING A SIGMA-DELTA
MODULATOR WITH OFFSET CORRECTION AND WITH GAIN SETTING**

A transducer interface arrangement including sensor means (SM) for
5 measuring a parameter such as temperature, pressure, ..., an Analog-to-Digital
Converter (ADCb) including a Sigma-Delta Modulator (SDMb), and a selectable
resistor string (SRSa). The data input of the Sigma-Delta Modulator is connected
to the series combination of a first switched-capacitor module (SC1, SC1b), a first
differential amplifier (A1), a second switched-capacitor module (SC2) and a
10 second differential amplifier (A2), followed by a comparator (CP). The modulator
further comprises a third (SC3) and a fourth (SC4) switched-capacitor module to
which a reference voltage is applied and which are respectively connected to the
input of the first and the second amplifier. To reduce the chip area and power
consumption while increasing the performance of the arrangement, an offset
15 canceling pre-amplifier to the A/D converter is advantageously replaced by a
fifth switched-capacitor module (SC5), to which an offset voltage is applied. The
offset voltage is provided, together with the reference voltage, by the selectable
resistor string (SRSa). In addition to the improved offset correction, the present
transducer interface arrangement is also provided with simple gain setting
20 means. To this end, gain setting modules consisting of one or more switchable
capacitive branches coupled in parallel with existing capacitors in the first
switched-capacitor module (SC1b). The more branches which are added, the
higher the gain.