

Software Configurable Analog Output AFE



With the advent of Industry 4.0, factory owners and industrial manufacturers are faced with a new challenge: how to adapt their factories quickly and efficiently to meet shifting market demands.

In factory automation (FA) and Process Control systems, the main controller uses embedded or remote I/O modules to receive sensor inputs and provide outputs to the actuators.

An Industry 4.0 system must be so flexible that its inputs and outputs can be digitally configured by software without manual intervention, allowing for quick changes, increasing efficiency and reducing costs. With the latest semiconductor innovations, the I/O software configurability is now accomplished with the use of fully configurable Analog Input and Output Front End ICs.

With the aim of offering the above advantages to the PLC and DCS markets, NXP has developed a fully configurable Analog Output Front End which features 18 bits DAC, and a high level of integration and protection. This product is not a simple replacement of a discrete solution but a significant innovation which extends its benefit outside the mere PCB or BOM reduction but touches several aspects of the overall system solution.



Reconfigurability

Reconfigure a smart factory and adjust settings based on shifting market needs



Accuracy and precision

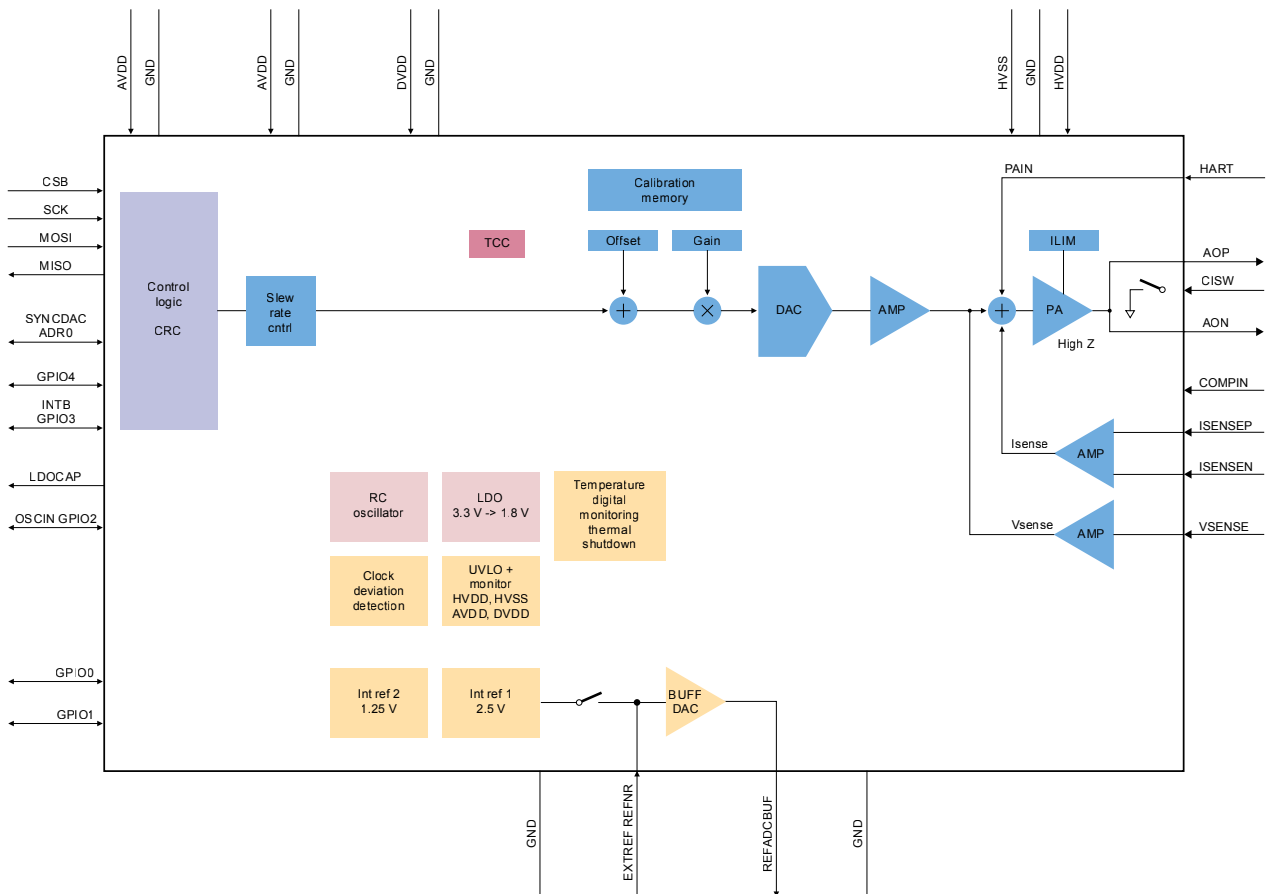
Improved product quality thanks to enhanced accuracy and precision



Predictive maintenance

Diagnostics and anomaly detection to identify issues before they occur

Analog output AFE block diagram



Channel configuration

- One software configurable Analog Output
- Ranges: ± 12.5 V, ± 25 mA
- Factory calibrated output

Resolution

- 18 bits DAC
- Data rate: 0 to 100 kSPS

Protection

- Integrated protection for short circuit in voltage mode and open circuit in current mode with configurable interrupt
- ± 36 V protected Output

TUE accuracy (user calibration)

- Factory Calibrated: $\pm 0.04\%$ at room, 0.05% over temperature
- User Calibrated: $\pm 0.004\%$ at room, 0.02% over temperature

General

- ± 7 V to ± 28 V supply voltage range
- -40 °C to 125 °C temperature range
- 6 mm x 6 mm small TQFN-40 package