Prowrench Opta Operational Description

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The ProWrench Opta is a family of hand held wrenches that measure, display, store and transmit torque. Each family member measures torque over a specific range, for example, 2.5-25Nm, 7.5-75Nm, 18-180Nm.

The operator applies torque to a joint via a drive fitting fixed to the head of the wrench. This is converted into a strain in a bending beam inside the wrench. This strain is measured by strain gauges. The signal output from the strain gauges is amplified and measured with the results sent to a microcontroller. This microcontroller can display the results on a LCD, it can store the results in memory, and it can transmit the results to a computer via either a RS232 interface or via a Bluetooth module replacing the cable connection. The microcontroller function is controlled by input from a simple keypad.

The RS232 and Bluetooth functions share the same communication port with the microcontroller and so only one can operate at a time. Therefore serial information can be received and transmitted down a cable using RS232 (Lemo connector) or via Bluetooth module and the antenna (in the dome on the side of the wrench housing) acting as a serial cable replacement but not both at the same time.

Another variant is that some wrenches will also be able to measure angle while torque is being measured due to a Gyro being fitted within the housing and connecting to the measurement circuitry.

The Prowrench Opta is battery powered either with 2 alkaline C cells (nominally 3V) or a NiMH rechargeable battery pack (nominally 3.6V). These voltages are converted internally by power supply circuitry to provide the power for all the other circuit elements. It is possible to charge the batteries while they are in the Prowrench Opta but it is impossible to operate the wrench while the batteries are being charged.

Block Diagram